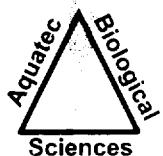


167463

**Results of  
*Hyalella azteca* Survival and Growth  
Sediment Toxicity Tests  
Conducted on Sediment Samples from  
Dead Creek / Sauget, Illinois**

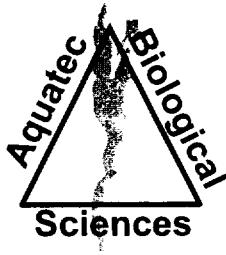
Reference BTRs 3615, 3622, 3629, 3633, 3641, 3643

Prepared for:  
Menzie-Cura & Associates  
1 Courthouse Lane, Suite 2  
Chelmsford, MA 01824



Prepared by:  
**Aquatec Biological Sciences**  
75 Green Mountain Drive  
South Burlington, Vermont

December 1999



# Aquatec Biological Sciences



Ecology



Environmental  
Toxicology



Natural Resource  
Assessments

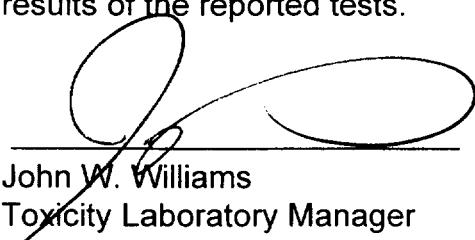


Microbiology

BTRS 3615, 3622, 3629, 3633, 3641, 3643

PROJECT: 99033

I have reviewed this data package, which was completed under my supervision. This data package is complete, and to the best of my ability, accurately reflects the conditions and the results of the reported tests.



John W. Williams  
Toxicity Laboratory Manager

12/6/99  
Date

I have reviewed and discussed this data package with the responsible laboratory manager. Based on this review, the data package was, to the best of my knowledge and belief, conducted in accordance with established company quality assurance procedures.

Philip C. Downey  
Philip C. Downey, Ph.D.  
Director

12/14/99  
Date

## TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	1
INTRODUCTION.....	2
METHODS.....	2
PROTOCOL DEVIATIONS.....	3
RESULTS.....	4
QUALITY ASSURANCE .....	5

## LIST OF APPENDICES

- APPENDIX A: RESULTS OF WHOLE SEDIMENT TOXICITY TESTS
- APPENDIX B: CHAIN-OF-CUSTODY DOCUMENTATION
- APPENDIX C: LABORATORY DOCUMENTATION AND DATA ANALYSES FOR  
*Hyalella azteca* TOXICITY TESTS
- APPENDIX D: RESULTS OF STANDARD REFERENCE TOXICANT TESTS

## EXECUTIVE SUMMARY

### 100.1HASG Amphipod, *Hyalella azteca* 10 Day Survival and Growth Test Conducted October 7 - October 31, 1999 for Menzie-Cura & Associates Dead Creek Site

Laboratory Sample ID	Client Sample ID	Mean Survival (%)	Mean Dry Weight (mg)
12546	BTOX-C-1	90	0.080*
12547	BTOX-C-2	71	0.064*
12548	BTOX-C-3	68*	--
12549	BTOX-D-1	90	0.172
12550	BTOX-D-2	88	0.134*
12551	BTOX-D-3	90	0.168
12552	Laboratory Control Sediment	86	0.223
12589	BTOX-B-1	16*	--
12590	BTOX-B-1 (DUPE)	19*	--
12591	BTOX-B-2	1*	--
12592	BTOX-B-3	64*	--
12593	BTOX-M	10*	--
12609	E-1 Dead Creek	23*	--
12610	E-2 Dead Creek	76	0.664
12611	E-3 Dead Creek	85	0.141*
12612	BP-1 Borrow Pit	89	0.156*
12613	BP-1 Borrow Pit (DUPE)	94	0.154*
12614	BP-3 Borrow Pit	91	0.154*
12622	Laboratory Control Sediment	86	0.202
12638	BP-2 Borrow Pit	96	0.172
12639	F-1 Dead Creek Section F	91	0.221
12640	F-2 Dead Creek Section F	86	0.219
12641	F-3 Dead Creek Section F	83	0.183
12664	Prairie DuPont Creek	98	0.254
12665	Prairie DuPont Creek 2	98	0.404
12666	Reference Creek	98	0.393
12668	Laboratory Control Sediment	98	0.268
12671	Ref 2-2 Reference Borrow Pit	98	0.335

\* The response data were statistically significantly different from the corresponding laboratory control sediment ( $p \leq 0.05$ )

-- When a significant reduction in survival was detected, mean dry weight data were only reported in Appendix A (See Results).

## **INTRODUCTION:**

Samples were received for toxicity testing at Aquatec Biological Sciences of 75 Green Mountain Drive, South Burlington, Vermont. Tests were conducted at Aquatec Biological Sciences. The results of the following tests are reported:

Client:	Menzie-Cura & Associates
Facility/Location:	Dead Creek / Sauget, IL
Initial Sampling Date:	October 4 - October 9, 1999
Testing Date:	October 7 – October 31 , 1999
Tests Conducted:	Amphipod, <i>Hyalella azteca</i> , 10-day Survival and Growth

## **METHODS:**

The procedures followed in conducting these toxicity tests were based on methods described by the USEPA (EPA 600/R-94/024). Test conditions for *Hyalella azteca* are listed in Table 1. Testing was begun in four separate groupings based upon chronological sequencing from the time of sediment collection. The objective for the test groupings was to complete the 10-day acute tests prior to expiration of a 14-day sediment storage time so that subsequent chronic toxicity tests could be started within a 14-day time frame. The first testing group was initiated on October 7, 1999. The second testing group was initiated on October 8, 1999. The third testing group was initiated on October 9, 1999. The fourth testing group was initiated on October 10, 1999. A laboratory control (artificial sediment) was included with each testing group.

Due to unacceptable survival in the both field and laboratory samples, the first three testing groups were combined into two testing groups and were retested, beginning on October 19, 1999 and October 21, 1999, within the project-specific sample holding time. The laboratory control associated with the October 10, 1999 testing group met survival acceptability criteria, therefore acute toxicity testing of samples associated with this testing group was not repeated.

## **Sediment Preparation**

The samples were stored refrigerated and in the dark whenever they were not being used in preparation for testing. Sediments distributed in test beakers were examined for the presence of indigenous organisms which were removed when observed. Also, large pieces of vegetative material (e.g., leaf litter, sticks, grass) were removed. Qualitative observations regarding the sediment type and indigenous organisms removed were recorded. A laboratory control sediment was used with each Sample Delivery Group. The laboratory control sediment (artificial sediment) was prepared following formulations specified in the USEPA protocols and then hydrated prior to distribution to test chambers. Sediments were then distributed to individual replicate test chambers, overlying water was added, and the overlying water renewal system was activated. The unused portion of each sample (in the original sample container) was returned to refrigerated storage.

## **Statistical Analysis**

Statistical comparisons were performed against the concurrent laboratory control. The growth measurement was based upon average dry weight of surviving amphipods per replicate, following the USEPA protocol for the test method. This procedure can result in inflated average dry weights for samples with significantly low survival. Statistical significance for any sample was based upon the most sensitive endpoint (survival or growth). An F-Test was performed to test for equality of variances between each sample comparison to the control. If variances were not significantly different, paired T-Tests with equal variances were used to determine whether there were significant reductions in mean survival (Arcsin transformed) and/or mean growth in each sample relative to the control. If the variance between a sample and control comparison was significantly different, paired T-Tests with unequal variances were used to determine significant reductions in mean survival and/or growth.

## **PROTOCOL DEVIATIONS:**

Surviving amphipods in four test replicates (Samples 12546D, 12550C, 12590D, and 12611B) were not measured for growth (replicate dry weight) due to an apparent laboratory error.

Replicate G of Sample 12590 was scored as having one amphipod surviving on Day 10, however, according to the laboratory documentation, two amphipods from this replicate were weighed for growth determination.

Sample 12547, Replicate H had two surviving amphipods recovered on Day 10. A large dragonfly nymph was also found in this replicate, leading to the possibility that amphipod predation had occurred.

Sample 12609 had an unusual characteristic in the laboratory, in that the sediment expanded within the test beakers. In one replicate (Replicate D), a portion of the sediment separated and floated to the water surface. On Day 10 the measured dissolved oxygen below this separation layer was measured to be 2.0 mg/L

## RESULTS:

Summary result tabulations for the *Hyalella azteca* whole sediment toxicity tests are located in Appendix A.

Group 1 Test Results: This group included samples 12546 (BTOX-C-1), 12547 (BTOX-C-2), 12548 (BTOX-C-3), 12549 (BTOX-D-1), 12550 (BTOX-D-2), 12551 (BTOX-D-3), 12589 (BTOX-B-1), 12590 (BTOX-B-1 duplicate), 12591 (BTOX-B-2), 12592 (BTOX-B-3), 12593 (BTOX-M), 12609 (E-1 Dead Creek), and 12610 (E-2 Dead Creek). Samples 12548, 12589, 12590, 12591, 12592, 12593, and 13609 had survival responses that were significantly less than the Laboratory Control Sample (12552). Samples 12546, 12547, and 12550 had growth responses that were significantly less than the Laboratory Control Sample (12552).

Group 2 Test Results: This group included samples 12611 (E-3 Dead Creek), 12612 (BP-1 Borrow Pit), 12613 (BP-1 Borrow Pit duplicate), and 12614 (BP-3 Borrow Pit), 12638 (BP-2 Borrow Pit), 12639 (F-1 Dead Creek Section F) 12640 (F-2 Dead Creek Section F), 12641 (F-3 Dead Creek Section F). None of the samples in this testing group had survival responses that were significantly less than the Laboratory Control Sample (12622). Samples 12611,

12612, 12613, and 12614 had growth responses that were significantly less than the Laboratory Control Sample (12622).

Group 3 Test Results: This group included samples 12664 (Prairie DuPont Creek), 12665 (Prairie DuPont Creek 2), 12666 (Reference Creek), and 12671 (Ref 2-2 Reference Borrow Pit). The survival and growth responses in all the samples in this testing group were not significantly less than the Labortory Control Sample (12668

Total Ammonia and Sulfide: Total ammonia concentrations were less than 25 mg/L in all porewaters and less than 7 mg/L in overlying water. Total sulfide was not detected (<0.5 mg/L) in any porewater samples, therefore, testing fo sulfide in overlying water was not conducted.

#### QUALITY ASSURANCE:

A standard reference toxicant SRT test was conducted concurrently with each batch of *Hyalella azteca*. The resulting LC50 values fell within control chart limits and were viewed as being acceptable.

**Table 1. Test Conditions for the Amphipod (*Hyalella azteca*) 10-day Whole Sediment Survival and Growth Toxicity Test.**

---

ASSOCIATED PROTOCOL: EPA, 1994. *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates Method 100.1 (EPA/600/R-94/024)*.

1. Test type:	Whole-sediment toxicity (static renewal)
2. Test temperature:	23 ± 1°C
3. Light quality:	Wide-spectrum fluorescent lights
4. Light illuminance:	500 to 1000 lux
5. Photoperiod:	16 hr. light, 8 hr. dark
6. Test chamber size:	300 mL beaker
7. Sediment volume:	100 mL (distributed to test chambers on the day prior to administration of test organisms
8. Overlying water volume:	175 mL
9. Renewal of overlying water :	At least twice daily
10. Age of test organisms:	7-14 days old at the start of the test
11. Number of organisms / test chamber:	10
12. Number of replicate test chambers / treatment:	8
13. Feeding regime:	1.5 mL YCT daily
14. Aeration:	None unless dissolved oxygen in overlying water drops below 40% saturation or demonstrates a declining trend during daily monitoring. If required, aeration will be sufficiently gentle to prevent resuspension of sediments to the overlying water. Additional water renewals may be used in lieu of aeration.
15. Overlying water:	Reconstituted water (EPA/600/R-94/024)

---

**Table 2. Test Conditions for the Amphipod (*Hyalella azteca*) 10-Day Whole Sediment Survival and Growth Toxicity Test (continued).**

---

16. Control sediment:	Formulated sediment (EPA/600/R-94/024, section 7.2.3.2)
17. Test chamber cleaning:	Overflow screens daily
18. Monitoring: Overlying water	
Temperature	Daily
Dissolved oxygen	Daily
pH	Beginning and end of test
Conductivity	Beginning and end of test
Alkalinity	Beginning and end of test
Hardness	Beginning and end of test
Ammonia	Beginning and end of test
Organism behavior	Within 2 hours to remove "floaters"
19. Test duration:	10 days
20. End points:	Survival and growth (dry weight to 0.01 mg, 60°C overnight), by replicate
21. Reference toxicant:	96-h acute, water only (KCl)
22. Test acceptability:	Minimum mean control survival of 80% and performance-based criteria outlined in EPA/600/R-94/024, Table 11.3
23. Statistical analysis and data interpretation:	Arc-sine (square-root) transformation of survival data. F-Tests were performed for equality of variance. Paired T-Tests were performed versus the negative control for survival and growth.

---

## **APPENDIX: A**

**Summary of Statistical Tests and Probabilities**  
**Dead Creek *Hyalella azteca* Acute Toxicity Test**  
**BTR: 3615a**

Day 10		<u>Survival</u>				<u>Growth</u>			
		Proportion Surviving	F-Test Equal Variance <sup>1</sup>	T-Test Statistical Probability	Statistically Significant	Average Weight(mg)	F-Test Equal Variance <sup>1</sup>	T-Test Statistical Probability	Statistically Significant
					*				
12552	Control	0.86				0.223			
12546	Sample	0.90	0.684	0.241		0.080	0.0856	0.0000	*
12547	Sample	0.71	0.132	0.066		0.064	0.0264	0.0000	*
12548	Sample	0.68	0.090	0.008	*	0.110	0.5088	0.0005	*
12549	Sample	0.90	0.021	0.251		0.172	0.3880	0.0966	
12550	Sample	0.88	0.412	0.382		0.134	0.5643	0.0041	*
12551	Sample	0.90	0.016	0.307		0.168	0.0460	0.0170	*

\* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

1. If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal variances.

1000  
10000  
100000

**Hyalella azteca**  
Acute Toxicity Test Results

Menzie-Cura  
Dead Creek  
99033

BTR 3615a  
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	Day 10 Data							
			# Surviving	Proportion Surviving	Mean Proportion Surviving	Initial Boat Weight (mg)	Total Dry Weight (mg)	# Organisms Weighed	Mean Wt. (mg)	Mean Wt. Reps I-L (mg)
12552	A	10	6	0.6		28.52	30.36	6	0.307	
	B	10	9	0.9		30.76	31.84	9	0.120	
	C	10	10	1		31.62	33.73	10	0.211	
	D	10	9	0.9		27.67	29.76	9	0.232	
	E	10	8	0.8		29.39	31.17	8	0.223	
	F	10	9	0.9		29.56	32.15	9	0.288	
	G	10	9	0.9		29.61	31.76	9	0.239	
	H	10	9	0.90	0.86	21.96	23.43	9	0.163	0.223
12546	A	10	9	0.90		29.35	29.70	9	0.039	
	B	10	9	0.90		33.28	34.17	9	0.099	
	C	10	9	0.90		31.89	32.49	9	0.067	
	D	10	9	0.90				*	*	
	E	10	10	1.00		30.55	31.55	10	0.100	
	F	10	10	1.00		29.54	30.13	10	0.059	
	G	10	7	0.70		31.04	31.90	7	0.123	
	H	10	9	0.90	0.90	36.72	37.41	9	0.077	0.080
12547	A	10	6	0.60		27.76	27.98	6	0.037	
	B	10	10	1.00		30.95	31.60	10	0.065	
	C	10	7	0.70		33.31	33.71	7	0.057	
	D	10	8	0.80		31.58	32.21	8	0.079	
	E	10	7	0.70		31.94	32.53	7	0.084	
	F	10	9	0.90		33.35	34.11	9	0.084	
	G	10	8	0.80		25.95	26.62	8	0.084	
	H	10	2	0.20	0.71	33.87	34.29	2	0.021	0.064
12548	A	10	8	0.80		30.15	30.87	8	0.090	
	B	10	6	0.60		29.31	30.55	6	0.207	
	C	10	6	0.60		31.25	31.55	6	0.050	
	D	10	6	0.60		30.00	30.78	6	0.130	
	E	10	7	0.70		29.78	30.30	7	0.074	
	F	10	6	0.60		31.74	32.32	6	0.097	
	G	10	8	0.80		30.16	31.04	8	0.110	
	H	10	7	0.70	0.68	24.43	25.29	7	0.123	0.110
12549	A	10	10	1.00		31.68	33.23	10	0.155	
	B	10	8	0.80		26.02	26.64	8	0.078	
	C	10	10	1.00		27.87	29.33	10	0.146	
	D	10	8	0.80		32.54	33.43	8	0.111	
	E	10	6	0.80		28.32	29.87	8	0.194	
	F	10	9	0.90		25.55	26.76	8	0.151	
	G	10	10	1.00		31.47	32.56	3	0.363	
	H	10	9	0.90	0.90	28.89	30.50	9	0.179	0.172
12550	A	10	9	0.90		27.87	28.57	9	0.078	
	B	10	10	1.00		25.64	26.40	9	0.084	
	C	10	9	0.90				*	*	
	D	10	5	0.50		29.10	30.10	5	0.200	
	F	10	10	1.00		33.58	34.67	10	0.109	
	G	10	9	0.90		23.84	24.96	9	0.124	
	H	11	11	1.00	0.88	23.93	25.89	11	0.178	0.134
12551	A	10	9	0.90		28.94	30.32	9	0.153	
	B	10	10	1.00		32.79	34.17	10	0.138	
	C	10	8	0.80		34.40	35.91	8	0.189	
	D	10	10	1.00		27.15	28.98	10	0.183	
	E	10	9	0.90		33.25	34.79	9	0.171	
	F	10	9	0.90		32.88	34.80	9	0.213	
	G	10	7	0.70		27.47	28.58	7	0.159	
	H	10	10	1.00	0.90	25.40	26.75	10	0.135	0.168

\* No organisms weighed, see Protocol Deviations.

000002

**Summary of Statistical Tests and Probabilities**  
**Dead Creek *Hyalella azteca* Acute Toxicity Test**  
**BTR: 3615b**

Day 10		<u>Survival</u>				<u>Growth</u>			
		Proportion Surviving	F-Test Equal Variance <sup>1</sup>	T-Test Statistical Probability	Statistically Significant	Average Weight (mg)	F-Test Equal Variance <sup>1</sup>	T-Test Statistical Probability	Statistically Significant
12552	Control	0.86				0.223			
12589	Sample	0.16	0.184	0.000	*	0.937	0.0000	0.0199	
12590	Sample	0.19	0.044	0.000	*	0.550	0.0000	0.1467	
12591	Sample	0.01	0.530	0.000	*	0.000	NA <sup>2</sup>	NA <sup>2</sup>	*
12592	Sample	0.64	0.055	0.005	*	0.411	0.0087	0.0122	
12593	Sample	0.10	0.325	0.000	*	1.372	0.0000	0.0339	
12609	Sample	0.23	0.269	0.000	*	2.136	0.0000	0.0029	
12610	Sample	0.76	0.233	0.135		0.664	0.0138	0.0000	

\* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

1. If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal variances.

2. There was not enough sample and/or control response variability to conduct a meaningful F-Test.

*Hyalella azteca*  
Acute Toxicity Test Results

Menzie-Cura  
Dead Creek  
99033

BTR 3615b  
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	Day 10 Data							
			# Surviving	Mean Proportion Surviving	Initial Boat Weight (mg)	Total Dry Weight (mg)	# Organisms Weighed	Mean Wt. (mg)	Mean Wt. Reps I-L (mg)	
12552	A	10	6	0.60	28.52	30.36	6	0.307		
	B	10	9	0.90	30.76	31.64	9	0.120		
	C	10	10	1.00	31.62	33.73	10	0.211		
	D	10	9	0.90	27.57	29.76	9	0.232		
	E	10	8	0.80	29.39	31.17	8	0.223		
	F	10	9	0.90	29.56	32.15	9	0.288		
	G	10	9	0.90	29.61	31.76	9	0.239		
	H	10	9	0.90	0.86	21.96	23.43	9	0.163	0.223
12589	A	10	0	0.00			0	0.000		
	B	10	1	0.10	27.32	28.90	1	1.580		
	C	10	2	0.20	25.27	27.00	1	1.730		
	D	10	0	0.00			0	0.000		
	E	10	1	0.10	27.39	29.27	1	1.880		
	F	10	2	0.20	30.30	33.22	2	1.460		
	G	10	2	0.20	27.29	28.29	2	0.500		
	H	10	5	0.50	0.16	31.89	33.28	4	0.348	0.937
12590	A	10	1	0.10	34.53	36.46	1	1.930		
	B	10	0	0.00			0	0.000		
	C	10	5	0.50	33.17	35.63	5	0.532		
	D	10	6	0.60			*	*		
	E	10	2	0.20	32.63	35.25	2	1.210		
	F	10	0	0.00			0	0.000		
	G	10	1	0.10	35.04	35.40	2	0.150		
	H	10	0	0.00	0.19		0	0.000	0.550	
12591	A	10	0	0.00			0	0.000		
	B	10	0	0.00			0	0.000		
	C	10	0	0.00			0	0.000		
	D	10	0	0.00			0	0.000		
	E	10	0	0.00			0	0.000		
	F	10	0	0.00			0	0.000		
	G	10	1	0.10			0	0.000		
	H	10	0	0.00	0.01		0	0.000	0.000	
12592	A	10	8	0.80	30.25	33.04	6	0.349		
	B	10	4	0.40	32.94	34.30	3	0.453		
	C	10	8	0.80	26.43	30.67	6	0.280		
	D	10	8	0.80	33.73	37.12	6	0.424		
	E	10	8	0.80	30.41	32.06	7	0.236		
	F	10	5	0.50	38.87	40.21	5	0.268		
	G	10	3	0.30	25.29	26.69	3	0.467		
	H	10	7	0.70	0.64	33.5	39.21	7	0.816	0.411
12593	A	10	1	0.10	26.62	29.00	1	2.180		
	B	10	2	0.20	31.37	33.69	2	1.160		
	C	10	0	0.00			0	0.000		
	D	10	0	0.00			0	0.000		
	F	10	1	0.10	22.80	26.11	1	3.210		
	G	10	0	0.00			0	0.000		
	H	10	1	0.10	0.10	25.36	29.11	1	3.750	1.372
12609	A	10	1	0.10	37.16	40.62	1	3.660		
	B	10	1	0.10	33.81	37.05	1	3.440		
	C	10	1	0.10	36.62	42.83	1	4.010		
	D	10	6	0.60	36.43	40.24	6	0.635		
	E	10	2	0.20	25.59	29.70	3	1.037		
	F	10	2	0.20	25.53	29.12	2	1.295		
	G	10	4	0.40	32.31	35.65	4	0.635		
	H	10	1	0.10	0.23	32.77	34.95	1	2.160	2.136
12610	A	10	6	0.60	25.00	28.98	6	0.663		
	B	10	8	0.80	29.95	35.42	6	0.684		
	C	10	8	0.80	26.78	32.93	6	0.769		
	D	10	10	1.00	32.53	36.55	10	0.402		
	E	10	10	1.00	30.09	34.73	10	0.464		
	F	10	7	0.70	25.59	29.73	6	0.690		
	G	10	8	0.80	27.03	31.63	7	0.686		
	H	10	4	0.40	0.76	34.39	38.21	4	0.955	0.664

\* No organisms weighed, see Protocol Deviations

000004

**Summary of Statistical Tests and Probabilities**  
**Dead Creek *Hyalella azteca* Acute Toxicity Test**  
**BTR: 3633a**

Day 10	<u>Survival</u>					<u>Growth</u>				
	Proportion Surviving	F-Test	T-Test	Statistical Probability	Statistically Significant	Average Weight (mg)	F-Test	T-Test	Statistical Probability	Statistically Significant
		Equal	Variance <sup>1</sup>				Equal	Variance <sup>1</sup>		
12622	Control	0.86				0.202				
12611	Sample	0.85	0.653	0.402		0.141	0.620	0.001	*	
12612	Sample	0.89	0.105	0.376		0.156	0.701	0.007	*	
12613	Sample	0.94	0.043	0.462		0.154	0.894	0.009	*	
12614	Sample	0.91	0.037	0.436		0.154	0.851	0.006	*	

\* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

1. If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal variances.

*Hyalella azteca*  
Acute Toxicity Test Results

Menzie-Cura  
Dead Creek  
99033

BTR 3633a  
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	# Surviving	Day 10 Data							
				Mean Proportion Surviving	Initial Boat Weight (mg)	Total Dry Weight (mg)	# Organisms Weighed	Mean Wt. (mg)	Mean Wt. Reps I-L (mg)		
				Proportion Surviving							
12622	A	10	7	0.70	35.9	37.45	7	0.221			
	B	10	10	1.00	33.92	35.55	10	0.163			
	C	10	8	0.80	33.32	34.81	8	0.186			
	D	10	9	0.90	35.54	37.78	9	0.249			
	E	10	10	1.00	36.47	38.59	10	0.212			
	F	10	10	1.00	32.63	34.74	10	0.211			
	G	10	8	0.80	34.83	35.85	7	0.146			
	H	10	7	0.70	0.86	38.00	39.57	7	0.224		0.202
12611	A	10	6	0.60	34.69	35.59	6	0.150			
	B	10	8	0.80			*	*			
	C	10	9	0.90	35.63	36.65	9	0.113			
	D	10	8	0.80	39.05	40.29	8	0.155			
	E	10	9	0.90	33.19	34.90	9	0.190			
	F	10	10	1.00	36.59	37.69	10	0.110			
	G	10	9	0.90	39.11	40.26	9	0.126			
	H	10	9	0.90	0.85	35.08	36.37	9	0.143		0.141
12612	A	10	8	0.80	38.55	39.66	8	0.139			
	B	10	9	0.90	35.51	36.77	9	0.140			
	C	10	10	1.00	35.22	36.80	10	0.158			
	D	10	8	0.80	35.08	36.51	8	0.179			
	E	10	9	0.90	34.78	35.87	9	0.121			
	F	10	9	0.90	34.36	35.98	9	0.180			
	G	10	9	0.90	41.04	42.20	9	0.129			
	H	10	9	0.90	0.89	45.19	47.04	9	0.206		0.156
12613	A	10	10	1.00	40.36	41.89	10	0.153			
	B	10	9	0.90	39.26	40.33	9	0.119			
	C	10	10	1.00	33.68	34.99	10	0.131			
	D	10	8	0.80	41.33	42.35	8	0.128			
	E	10	10	1.00	41.45	42.84	10	0.139			
	F	10	10	1.00	40.34	41.91	10	0.157			
	G	10	9	0.90	42.22	44.29	9	0.230			
	H	10	9	0.90	0.94	40.51	42.12	9	0.179		0.154
12614	A	10	10	1.00	38.64	39.76	10	0.112			
	B	10	9	0.90	38.95	40.19	9	0.138			
	C	10	7	0.70	37.28	36.23	7	0.136			
	D	10	10	1.00	35.61	37.18	10	0.137			
	E	10	10	1.00	37.76	39.92	10	0.216			
	F	10	10	1.00	41.40	42.92	10	0.152			
	G	10	7	0.70	41.23	42.46	7	0.176			
	H	10	10	1.00	0.91	40.04	41.68	10	0.164		0.154

\*No organisms weighed, see Protocol Deviations.

000000

**Summary of Statistical Tests and Probabilities**  
**Dead Creek *Hyalella azteca* Acute Toxicity Test**  
**BTR: 3633b**

<u>Day 10</u>		<u>Survival</u>				<u>Growth</u>			
		Proportion Surviving	F-Test Equal Variance <sup>1</sup>	T-Test Statistical Probability	Statistically Significant	Average Weight (mg)	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant
12622	Control	0.86				0.202			
12638	Sample	0.96	0.054	0.036		0.172	0.434	0.085	
12639	Sample	0.91	0.349	0.216		0.221	0.885	0.140	
12640	Sample	0.86	0.051	0.233		0.219	0.741	0.144	
12641	Sample	0.83	0.043	0.154		0.183	0.213	0.217	

\* A statistically significant reduction in the response was observed (relative to the Laboratory Control, p<0.05).

1. If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal variances.

*Hyalella azteca*  
Acute Toxicity Test Results

Menzie-Cura  
Dead Creek  
99033

BTR 3633b  
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	Day 10 Data							
			# Surviving	Proportion Surviving	Mean Proportion Surviving	Initial Boat Weight (mg)	Total Dry Weight (mg)	# Organisms Weighed	Mean Wt. (mg)	Mean Wt. Reps I-L (mg)
12622	A	10	7	0.70	0.86	35.9	37.45	7	0.221	
	B	10	10	1.00		33.92	35.55	10	0.163	
	C	10	8	0.80		33.32	34.81	8	0.186	
	D	10	9	0.90		35.54	37.78	9	0.249	
	E	10	10	1.00		36.47	38.59	10	0.212	
	F	10	10	1.00		32.63	34.74	10	0.211	
	G	10	8	0.80		34.83	35.85	7	0.146	
	H	10	7	0.70		38.00	39.57	7	0.224	0.202
12638	A	10	10	1.00	0.96	36.21	37.61	10	0.140	
	B	10	10	1.00		32.14	33.57	10	0.143	
	C	10	9	0.90		37.76	38.77	9	0.112	
	D	10	10	1.00		40.64	42.43	10	0.179	
	E	10	9	0.90		35.52	36.71	9	0.132	
	F	10	10	1.00		31.14	33.25	10	0.211	
	G	10	10	1.00		35.66	38.00	10	0.234	
	H	10	9	0.90		37.52	39.54	9	0.224	0.172
12639	A	10	9	0.90	0.91	34.44	35.79	9	0.150	
	B	10	10	1.00		36.84	38.81	10	0.197	
	C	10	8	0.80		34.06	36.20	8	0.268	
	D	10	9	0.90		27.24	29.41	9	0.241	
	E	10	10	1.00		28.68	31.15	10	0.247	
	F	10	8	0.80		34.61	36.40	8	0.224	
	G	10	9	0.90		37.94	40.05	9	0.234	
	H	10	10	1.00		37.24	39.34	10	0.210	0.221
12640	A	10	8	0.80	0.86	27.90	29.53	8	0.204	
	B	10	6	0.60		23.40	25.14	6	0.290	
	C	10	9	0.90		37.66	39.44	9	0.198	
	D	10	8	0.80		25.06	26.72	8	0.208	
	E	10	10	1.00		28.45	30.63	10	0.218	
	F	10	9	0.90		31.90	33.71	9	0.201	
	G	10	10	1.00		34.54	36.64	10	0.210	
	H	10	9	0.90		33.49	35.53	9	0.227	0.219
12641	A	10	8	0.80	0.83	30.74	31.70	8	0.120	
	B	10	10	1.00		30.83	32.75	10	0.192	
	C	10	9	0.90		31.24	32.49	9	0.139	
	D	12	12	1.00		33.61	35.62	12	0.168	
	E	10	9	0.90		34.36	36.17	9	0.201	
	F	10	7	0.70		26.92	28.19	7	0.181	
	G	10	4	0.40		36.63	37.85	4	0.305	
	H	10	9	0.90		39.97	41.38	9	0.157	0.183

00000

**Summary of Statistical Tests and Probabilities**  
**Dead Creek *Hyalella azteca* Acute Toxicity Test**  
**BTR: 3461**

Day 10	<u>Survival</u>					<u>Growth</u>				
	Proportion Surviving	F-Test Equal	T-Test Statistical Probability	Statistically Significant	Average Weight (mg)	F-Test Equal	T-Test Statistical Probability	Statistically Significant		
		Variance				Variance				
12668	Control	0.98			0.268					
12664	Sample	0.98	1.000	0.500	0.254	0.547	0.261			
12665	Sample	0.98	1.000	0.500	0.404	0.601	0.000			
12666	Sample	0.98	1.000	0.500	0.393	0.034	0.002			
12671	Sample	0.98	0.367	0.478	0.335	0.511	0.003			

\* A statistically significant reduction in the response was observed (relative to the Laboratory Control, p<0.05).

2  
1  
3  
2  
5

*Hyalella azteca*  
Acute Toxicity Test Results

Menzie-Cura  
Dead Creek  
99033

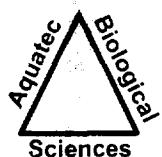
BTR 3641  
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	Day 10 Data							
			# Surviving	Mean Proportion Surviving	Initial Boat Weight (mg)	Total Dry Weight (mg)	# Organisms Weighed	Mean Wt. (mg) within Rep	Mean Wt. (mg) Reps I-L	
			#	Proportion Surviving						
12668	A	10	10	1.00	30.81	33.19	10	0.238		
	B	10	10	1.00	26.79	29.62	10	0.283		
	C	10	10	1.00	29.98	32.17	10	0.219		
	D	10	10	1.00	23.66	26.88	10	0.322		
	E	10	9	0.90	26.13	28.6	9	0.274		
	F	10	10	1.00	29.22	32.29	10	0.307		
	G	10	9	0.90	21.52	23.68	9	0.240		
	H	10	10	1.00	0.98	24.02	26.59	10	0.257	0.268
12664	A	10	10	1.00	39.18	40.98	10	0.180		
	B	10	10	1.00	32.99	35.06	10	0.207		
	C	10	9	0.90	41.23	43.62	9	0.266		
	D	10	10	1.00	36.75	39.51	10	0.276		
	E	10	10	1.00	32.17	35.43	10	0.326		
	F	10	9	0.90	40.12	42.65	9	0.281		
	G	10	10	1.00	36.04	38.49	10	0.245		
	H	10	10	1.00	0.98	35.76	38.29	10	0.253	0.254
12665	A	10	9	0.90	27.97	31.79	9	0.424		
	B	10	10	1.00	29.88	33.46	10	0.358		
	C	10	10	1.00	29.18	32.64	10	0.346		
	D	10	10	1.00	28.55	32.54	10	0.399		
	E	10	10	1.00	29.28	33.98	10	0.470		
	F	10	9	0.90	28.25	32.36	9	0.457		
	G	10	10	1.00	31.97	35.91	10	0.394		
	H	10	10	1.00	0.98	24.38	28.25	10	0.387	0.404
12666	A	10	9	0.90	34.15	37.52	9	0.374		
	B	10	10	1.00	34.11	38.09	10	0.398		
	C	10	10	1.00	35.53	39.32	10	0.379		
	D	10	10	1.00	37.52	41.57	10	0.405		
	E	10	10	1.00	29.66	33.32	10	0.366		
	F	10	10	1.00	32.52	36.79	10	0.427		
	G	10	9	0.90	32.96	37.95	9	0.554		
	H	10	10	1.00	0.98	31.85	34.27	10	0.242	0.393
12671	A	10	10	1.00	25.12	27.91	10	0.279		
	B	10	8	0.80	30.63	33.41	6	0.348		
	C	10	10	1.00	30.06	32.94	10	0.288		
	D	10	10	1.00	33.29	36.48	10	0.319		
	E	10	10	1.00	29.46	32.75	10	0.329		
	F	10	10	1.00	29.84	33.01	10	0.317		
	G	10	10	1.00	32.94	36.73	10	0.379		
	H	10	10	1.00	0.98	32.14	36.32	10	0.418	0.335

***Hyalella azteca Chronic Survival, Growth  
and Reproduction Toxicity Tests  
Conducted on Sediment Samples  
from the Solutia Site, Sauget , Illinois***

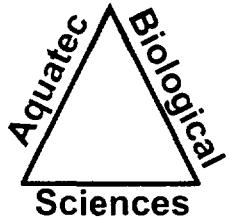
**Reference BTRs 3615, 3622, 3629, 3633, 3641, 3643**

**Prepared for:  
Menzie-Cura & Associates  
1 Courthouse Lane, Suite 2  
Chelmsford, MA 01824**



**Prepared by:  
Aquatec Biological Sciences  
75 Green Mountain Drive  
South Burlington, Vermont**

**December 1999**



# Aquatec Biological Sciences



Ecology



Environmental  
Toxicology



Natural Resource  
Assessments

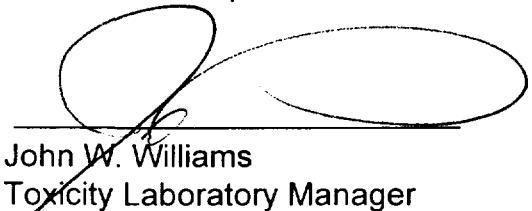


Microbiology

BTRS 3615, 3622, 3629, 3633, 3641, 3643

PROJECT: 99033

I have reviewed this data package, which was completed under my supervision. This data package is complete, and to the best of my ability, accurately reflects the conditions and the results of the reported tests.

  
John W. Williams

Toxicity Laboratory Manager

12/23/99

Date

I have reviewed and discussed this data package with the responsible laboratory manager. Based on this review, the data package was, to the best of my knowledge and belief, conducted in accordance with established company quality assurance procedures.

Philip C. Downey  
Philip C. Downey, Ph.D.  
Director

12/23/99  
Date

## TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	1
INTRODUCTION .....	2
METHODS .....	2
PROTOCOL DEVIATIONS .....	4
RESULTS .....	4
QUALITY ASSURANCE .....	5

## LIST OF APPENDICES

APPENDIX A: RESULTS OF WHOLE SEDIMENT TOXICITY TESTS

APPENDIX B: CHAIN-OF-CUSTODY DOCUMENTATION

APPENDIX C: LABORATORY DOCUMENTATION AND DATA ANALYSES FOR  
*Hyalella azteca* TOXICITY TESTS

APPENDIX D: RESULTS OF STANDARD REFERENCE TOXICANT TESTS

## EXECUTIVE SUMMARY

**100.1HA Amphipod, *Hyalella azteca*, 42-day Chronic Survival,  
 Growth, and Reproduction Test  
 Conducted October 19 - December 3, 1999  
 for Menzie-Cura & Associates  
 Solutia Site, Sauget Illinois**

Lab Test ID	Sample ID	Day 28 Mean Survival (%)	Day 28 Mean Dry Weight (mg)	Day 35 Mean Survival (%)	Day 42 Mean Survival (%)	Day 42 Mean Dry Weight (mg)	Day 42 Mean Number of Neonates/Female
12546	BTOX-C-1	93	0.766	92	87	0.510	11.5
12547	BTOX-C-2	88	0.456	76	73	0.489	3.7
12548	BTOX-C-3	90	0.656	80	76	0.402	3.3
12549	BTOX-D-1	89	0.571	85	84	0.414	5.1
12550	BTOX-D-2	87	0.684	85	81	0.428	4.0
12551	BTOX-D-3	80	0.731	79	79	0.400	3.5
12552	Laboratory Control	55	0.982	51	46	0.231	0.6
12589	BTOX-B-1	23*	--	8*	8*	--	--
12590	BTOX-B-1 (Dup)	22*	--	26*	26*	--	--
12591	BTOX-B-2	Acute Toxicity		--	--	--	--
12592	BTOX-B-3	49*	--	40*	39*	--	--
12593	BTOX-B-M	88	0.481	89	85	0.348	1.6
12609	E-1 Dead Creek	72*	--	63*	56*	--	--
12610	E-2 Dead Creek	97	0.612	94	91	0.462	4.6
12611	E-3 Dead Creek	67*	--	53	50*	--	--
12612	BP-1 Borrow Pit	93	0.594	88	83	0.380	4.1
12613	BP-1 (Dup) Borrow Pit	89	0.636	80	75	0.423	4.2
12614	BP-3 Borrow Pit	95	0.470	86	84	0.322	5.3
12615	Laboratory Control	62	0.296	36	33	0.299	1.8
12622	Laboratory Control	55	0.501	38	35	0.377	4.0
12638	BP-2 Borrow Pit	82	0.563	74	73	0.390	4.3
12639	F1 Dead Creek	91	0.639	89	84	0.397	4.8
12640	F2 Dead Creek	90	0.554	74	70	0.447	3.8
12641	F3 Dead Creek	89	0.661	85	76	0.406	4.8
12664	Prairie DuPont	90	0.443	83	79	0.346	2.6
12665	Praire Dupont 2	89	0.648	85	80	0.498	6.2
12666	Reference Creek	70*	--	64	65	0.459	2.3
12668	Laboratory Control	73	0.477	65	59	0.293	2.2
12671	Ref 2-2 Ref Borrow Pit	87	0.458	85	83	0.351	3.4

\* A statistically significant reduction in the response was observed (relative to a corresponding Reference Site response, P<0.05).

-- When a significant reduction in survival on Days 28 or 42 was detected, mean dry weight and reproduction data were only reported in Appendix A (See Results).

## INTRODUCTION:

Samples were received for toxicity testing at Aquatec Biological Sciences of 75 Green Mountain Drive, South Burlington, Vermont. The results of the following tests are reported:

Client:	Menzie-Cura & Associates
Facility/Location:	Dead Creek / Sauget, Illinois
Initial Sampling Date:	October 4 - October 9, 1999
Testing Dates:	October 19 - December 3, 1999
Tests Conducted:	Amphipod, <i>Hyalella azteca</i> , Chronic 42-day Survival, Growth, and Reproduction

## METHODS:

### Toxicity Tests

The procedures followed in conducting these toxicity tests were based on draft methods described by the USEPA (EPA 600/R-98/XXX [new number pending]). Test conditions for *Hyalella azteca* are listed in Table 1. Testing was completed in four separate groupings based upon chronological sequencing from the time of sediment collection. The objective for the test groupings was to complete the 10-day acute tests prior to expiration of a project-specific 14-day sediment storage time so that subsequent chronic toxicity tests could be started within a 14-day time frame. The acute toxicity results were reported separately (Aquatec Biological Sciences, December 1999).

Sediments were loaded into beakers for chronic testing within one day after completion of the acute toxicity tests, therefore, the objective of starting all tests within 14-days from the time of collection was accomplished for all samples. Chronic toxicity testing with *Hyalella azteca* was initiated for all samples received because some acute toxicity retests were also being started concurrently. Chronic toxicity testing for the first testing group was initiated on October 19, 1999. The second testing group was initiated on October 20, 1999. The third testing group was initiated on October 21, 1999. The fourth testing group was initiated on October 22, 1999. After the conclusion of the acute retests, chronic testing of Sample 12591 was suspended on Day 16 because acute toxicity was confirmed and then verified by examination of several replicates from the chronic test replicates.

A laboratory control (artificial sediment) was included with each testing group. Amphipods, seven days old, obtained from Aquatic Research Organisms were used for chronic toxicity tests.

Test organisms were exposed for 28 days to sediment samples. On Day 28, surviving amphipods were assessed for survival (all replicates) and growth (by dry weight, four replicates). Organisms from eight replicates were shifted to water only exposure for subsequent survival, growth, and reproduction (neonate production) assessment.

Chronic toxicity tests were ended on Day 42. Overlying water was renewed either automatically or manually. For those samples/replicates renewed automatically, the renewal cycle was programmed for midnight and noon of each day. For samples/replicates renewed manually, the renewal cycle was performed at approximately 7:00 a.m. and 7:00 p.m. daily. Documentation of renewals and renewal system checks is located in Appendix C. At the conclusion of the sediment exposure any additional amphipods recovered during Quality Assurance repicks were included in the Day 28 replicate survival assessment, but were not included in the replicate growth assessment.

### **Sediment Preparation**

The samples were stored refrigerated and in the dark whenever they were not being used in preparation for testing. Sediments distributed in test beakers were examined for the presence of indigenous organisms that were removed when observed. Also, large pieces of vegetative material (e.g., leaf litter, sticks, grass) were removed if observed. Qualitative observations regarding the sediment type and indigenous organisms removed were recorded. The laboratory control sediment (artificial sediment) was prepared following formulations specified in the USEPA protocols and then hydrated prior to distribution to test chambers. Sediments were then distributed to individual replicate test chambers, overlying water was added, and the overlying water renewal system was activated. The unused portion of each sample (in the original sample container) was returned to refrigerated storage.

## **Statistical Analyses**

Laboratory Control survival was variable and generally below the 28-day draft protocol target limits (This variability may reflect limitations of the USEPA recommended sediment formulation for adequately supporting *Hyalella azteca* survival and growth over extended periods of time.). Statistical comparisons were made against appropriate reference sites since this evaluation would provide more relevant biological comparisons.

Survival of the original amphipods and production of neonates was evaluated on Days 35 and 42. On the Day 35 assessment, the number of original amphipods were counted (alive) in the test beakers while the neonates were removed for enumeration. On Day 42 the original amphipods were removed and weighed, while the additional neonates produced were enumerated. Occasionally, the number of original amphipods counted on Day 35 was lower than those counted on Day 42, due in a large part to underestimation of Day 35 original amphipods associated with the variability of counting live swimming organisms. Statistical analysis of the Day 35 survival data was conducted on the observed counts.

Test data were evaluated for normality and equality of variance and the grouped data (See Results for statistical groupings.) were tested by appropriate parametric or non-parametric multiple comparison statistical tests to identify significant reductions in the response relative to the site-specific reference sample. Proportion surviving data were transformed (Arcsin square-root) before analysis. Statistical significance for any sample was based upon the most sensitive endpoint observed.

## **PROTOCOL DEVIATIONS:**

Several test replicates were excluded from the data tabulations and statistical analysis because of apparent discrepancies in the number of test organisms allocated to these replicates. The affected test replicates included: Samples 12546 (Replicates C and D); 12551 (Replicate C); 12590 (Replicate K); and, 12610 (Replicate E).

Sample 12550, Replicate F apparently had an initial allocation of eleven amphipods rather than

ten when the test was started.

Sample 12593 exhibited *Hyalella azteca* acute toxicity in the retest series. Replicate L of the *Hyalella azteca* chronic test for this sample was examined on Day 15. Surviving amphipods were recovered in this replicate, therefore the chronic toxicity test was continued. Replicate L was removed from the testing system and excluded from the analysis of chronic data.

Some minor recording discrepancies in the number of amphipods surviving versus the number of amphipods weighed occurred: 12662 Replicate K (Day 28 seven surviving, six weighed); 12638 Replicate C (Day 42 nine surviving, eight weighed); 12640 Replicate C (Day 42 five surviving, six weighed); 12640 Replicate H (Day 42 seven surviving, eight weighed); and, 13641 D (Day 42 seven surviving, nine weighed). Data were tabulated and statistical analyses were performed using the recorded data.

## **RESULTS:**

Summary result tabulations for the *Hyalella azteca* whole sediment toxicity tests are located in Appendix A.

Statistical Group 1 Results (Lotic, creek habitat): The combined responses for samples 12664 (Prairie DuPont) and 12665 (Prairie Dupont 2) were used as reference site data for statistical comparisons. Two computer runs were conducted due to limitations associated with the statistical software (A limited number of samples can be analyzed concurrently).

The first computer run included samples 12549 (BTOX-D-1), 12550 (BTOX-D-2), 12551(BTOX-D-3), 12609 (E-1 Dead Creek), 12610 (E-2 Dead Creek), 12611 (E-3 Dead Creek), 12639 (F-1 Dead Creek), 12640 (F2 Dead Creek), and 12641 (F3 Dead Creek). Sample 12609 exhibited statistically significant reductions in mean survival on Days 28, 35, and 42. Sample 12611 exhibited statistically significant reductions in mean survival on Days 28 and 42.

This second computer run of statistical analyses included samples 12546 (BTOX-C-1), 12547 (BTOX-C-2), 12548 (BTOX-C-3), 12589 (BTOX-B-1), 12590 (BTOX-B-1 Dup), 12592 (BTOX-B-

3), 12593 (BTOX-B-M), and 12666 (Reference Creek). Samples 12589, 12590, and 12592 exhibited statistically significant reductions in mean survival on Days 28, 35, and 42. Sample 12666 exhibited a statistically significant reduction in mean survival on Day 28.

Statistical Group 2 Results (Lentic, pond habitat): Sample 12671 (Ref 2-2 Ref Borrow Pit) was used as the reference site for statistical comparisons. This statistical group included samples 12612 (BP-1 Borrow Pit), 12613 (BP-1 (Dup) Borrow Pit), 12614 (BP-3 Borrow Pit) and, 12638 (BP-2 Borrow Pit). None of the samples in this statistical group exhibited statistically significant reductions in the responses evaluated.

**QUALITY ASSURANCE:**

A standard reference toxicant SRT test was conducted concurrently with a representative batch of *Hyalella azteca*. The resulting LC50 value fell within control chart limits and was viewed as being acceptable.

## **APPENDIX A**

### Summary of Statistical Tests and Probabilities

BTR: 3615

	Day 28	Survival				Growth				Neonate Production			
		Proportion	F-Test	T-Test	Statistically Significant <sup>1</sup>	Average	F-Test	T-Test	Statistically Significant <sup>1</sup>	Average neonates/ female	F-Test	T-Test	Statistically Significant <sup>1</sup>
			Equal	Statistical			Equal	Statistical			Equal	Statistical	
		Surviving	Variance	Probability		Weight(mg)	Variance	Probability	Significant <sup>1</sup>				

12552	Control	0.55				0.982							
12546	Sample	0.93	0.061	0.005		0.766	0.026	0.056					
12547	Sample	0.88	0.669	0.000		0.456	0.183	0.003	*				
12548	Sample	0.90	0.742	0.000		0.656	0.905	0.040	*				
12549	Sample	0.89	0.192	0.000		0.571	0.244	0.008	*				

### Day 35

12552	Control	0.51											
12546	Sample	0.92	0.282	0.025									
12547	Sample	0.76	0.292	0.011									
12548	Sample	0.80	0.447	0.020									
12549	Sample	0.85	0.134	0.001									

### Day 42

12552	Control	0.46				0.231				0.6			
12546	Sample	0.87	0.383	0.025		0.510	0.750	0.000		11.5	0.038	0.000	
12547	Sample	0.73	0.475	0.014		0.489	0.725	0.000		3.7	0.157	0.002	
12548	Sample	0.76	0.548	0.024		0.402	0.086	0.000		3.3	0.106	0.006	
12549	Sample	0.84	0.112	0.001		0.414	0.039	0.000		5.1	0.189	0.000	

1. \* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05)

100000

Amphipod, *Hyalella azteca*,  
Chronic Toxicity Test Results

Menzie-Cura  
Dead Creek  
99033

BTR 3615  
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	Day 28 Data							Day 35 Data				Day 42 Data				Day 35 + 42 Reproduction Data				Day 42 Growth Data			
			# Surviving	Mean Proportion Surviving	Initial Brwt (mg)	Total Dry Weight (mg)	# Organisms within Rep	Mean Wt. Reps I-L (mg)	# Surviving	Proportion Surviving	Mean Survival	Number Neonates	# Surviving	Proportion Surviving	Mean Survival / Sample	# Neonates	Total # Neonates	# Females / Rep	Mean Organisms / Female	Mean Organisms / Sample	Initial Pan Wt. (mg)	Total dry Wt. (mg)	Organisms Weighed	Mean Wt. within Rep A-H (mg)	
12552	A	10	8	0.80					7	0.70		0	7	0.70		0	0	3	0.0		21.20	23.07	7	0.267	
	B	10	2	0.20					0	0.00		0	0	0.00		0	0	0	0.0		0.00	0.00	0	0.000	
	C	10	8	0.80					6	0.60		0	6	0.60		0	0	1	0.0		26.72	28.35	6	0.273	
	D	10	7	0.70					6	0.60		3	6	0.60		0	3	3	1.0		26.56	27.95	6	0.232	
	E	10	5	0.50					5	0.50		1	4	0.40		6	7	2	3.5		25.01	26.19	4	0.295	
	F	10	5	0.50					5	0.50		0	4	0.40		0	0	4	0.0		27.23	28.16	4	0.233	
	G	10	8	0.80					5	0.50		0	3	0.30		0	0	2	0.0		28.10	28.79	3	0.230	
	H	10	7	0.70					7	0.70	0.51	2	7	0.70	0.46	0	2	4	0.5	0.6	26.31	28.55	7	0.320	
	I	10	4	0.40	24.28	26.97	4	0.672																	
	J	10	3	0.30	23.53	26.46	3	0.977																	
	K	10	4	0.40	24.62	29.45	4	1.208																	
	L	10	5	0.50	0.55	28.02	34.38	5	1.072	0.982															
12546	A	10	10	1.00					10	1.00		23	8	0.80		36	58	6	9.8		28.18	31.05	8	0.350	
	B	10	10	1.00					9	0.90		7	8	0.80		29	36	4	9.0		20.34	25.10	8	0.595	
	C	10	-	-					-	-		-	-	-		-	-	-	-		-	-	-	-	
	D	10	-	-					-	-		-	-	-		-	-	-	-		-	-	-	-	
	E	10	9	0.90					9	0.90		42	9	0.90		43	85	5	17.0		26.73	31.54	9	0.534	
	F	10	10	1.00					9	0.90		33	9	0.90		24	57	5	11.4		27.01	32.19	9	0.576	
	G	10	9	0.90					9	0.90		30	9	0.90		27	57	6	9.5		25.62	30.00	9	0.487	
	H	10	10	1.00					9	0.90	0.92	29	9	0.90	0.87	19	48	4	12.0	11.5	25.41	29.99	9	0.509	
	I	10	10	1.00	24.58	32.33	10	0.774																	
	J	10	7	0.70	24.35	30.13	7	0.826																	
	K	10	9	0.90	25.41	31.88	9	0.719																	
	L	10	9	0.90	0.93	26.86	33.57	9	0.748	0.766															
12547	A	10	10	1.00					10	1.00		2	10	1.00		22	24	7	3.4		27.35	31.58	10	0.423	
	B	10	9	0.90					8	0.80		15	8	0.80		0	15	6	2.5		25.57	29.03	8	0.433	
	C	10	9	0.90					8	0.80		24	8	0.80		0	24	5	4.8		25.71	29.40	8	0.461	
	D	10	10	1.00					7	0.70		14	6	0.60		0	14	2	7.0		26.73	30.84	6	0.685	
	E	10	8	0.80					5	0.50		0	4	0.40		0	0	1	0.0		22.82	24.43	4	0.403	
	F	10	10	1.00					8	0.80		6	8	0.80		14	20	4	5.0		25.13	28.53	8	0.425	
	G	10	9	0.90					8	0.80		4	7	0.70		5	9	4	2.3		27.92	30.92	7	0.429	
	H	10	7	0.70					7	0.70	0.76	6	7	0.70	0.73	16	24	5	4.8	3.7	25.67	30.27	7	0.657	
	I	10	9	0.90	23.55	27.42	9	0.430																	
	J	10	9	0.90	22.65	27.97	9	0.591																	
	K	10	5	0.50	23.08	24.94	5	0.372																	
	L	10	10	1.00	0.88	24.60	28.89	10	0.429	0.456															
12548	A	10	10	1.00					10	1.00		18	8	0.80		10	28	5	5.6		24.82	28.39	8	0.446	
	B	10	10	1.00					10	1.00		21	10	1.00		13	34	6	0.0		25.63	29.04	10	0.341	
	C	10	3	0.30					1	0.10		0	1	0.10		0	0	0	0.0		26.58	27.01	1	0.430	
	D	10	10	1.00					10	1.00		13	9	0.90		18	31	5	6.2		23.71	26.68	9	0.330	
	E	10	9	0.90					8	0.80		1	8	0.80		11	12	4	3.0		28.19	31.48	8	0.411	
	F	10	9	0.90					8	0.80		5	8	0.80		1	6	2	3.0		24.01	27.73	8	0.465	
	G	10	10	1.00					9	0.90		17	11	1.10		26	43	8	4.8		29.62	34.23	11	0.419	
	H	10	10	1.00					8	0.80	0.80	5	6	0.60	0.76	7	12	3	4.0	3.3	24.53	28.75	8	0.370	
	I	10	10	1.00	20.70	32.04	10	0.424																	
	J	10	8	0.80	24.16	30.91	8	0.044																	
	K	10	9	0.90	25.95	33.38	8	0.120																	
	L	10	10	1.00	0.90	25.52	30.84	10	0.532	0.654															
12549	A	10	10	1.00					10	1.00		18	10	1.00		15	31	5	6.2		27.07	30.78	10	0.371	
	B	10	9	0.90					9	0.90		5	8	0.80		5	10	2	5.0		27.18	30.89	8	0.464	
	C	10	8	0.80					7	0.70		23	8	0.80		21	44	5	8.8		25.91	29.66	8	0.468	
	D	10	10	1.00					8	0.80		1	7	0.70		6	7	2	3.5		28.48	29.52	7	0.434	
	E	10	10	1.00					9	0.90		9	9	0.90		9	18	6	3.0		25.11	28.36	9	0.361	
	F	10	10	1.00					9	0.90		14	9	0.90		16	30	5	8.0		24.98	28.37	9	0.379	
	G	10	9	0.90					9	0.90		4	9	0.90		5	10	4	2.5		28.80	32.37	8	0.397	
	H	10	8	0.80					7	0.70	0.85	1	7	0.70	0.64	27	28	5	5.6	5.1	26.55	29.60	7	0.436	
	I	10	9	0.90	24.64	28.75	9	0.568																	
	J	10	8	0.80	27.33	30.71	8	0.423																	
	K	10	7	0.70	29.10	33.68	7	0.654																	
	L	10	9	0.90	0.89	25.92	31.69	9	0.641	0.571															

RHB  
12/21

• Replicate excluded from analysis. See Protocol Deviations.

**Summary of Statistical Tests and Probabilities**

BTR: 3615

		<u>Survival</u>				<u>Growth</u>				<u>Neonate Production</u>			
		Proportion	F-Test Equal	T-Test Statistical	Statistically Significant <sup>1</sup>	Average	F-Test Equal	T-Test Statistical	Statistically Significant <sup>1</sup>	Average neonates/ female	F-Test Equal	T-Test Statistical	Statistically Significant <sup>1</sup>
<u>Day 28</u>		Surviving	Variance	Probability		Weight(mg)	Variance	Probability	Significant <sup>1</sup>				
12552	Control	0.55				0.982							
12550	Sample	0.87	0.844	0.000		0.684	0.854	0.066					
12551	Sample	0.80	0.863	0.001		0.731	0.217	0.045	*				

Day 35

12552	Control	0.51			
12550	Sample	0.85	0.800	0.003	
12551	Sample	0.79	0.498	0.004	

Day 42

12552	Control	0.46								0.6			
12550	Sample	0.81	0.978	0.004		0.428	0.143	0.000		4.0	0.036	0.005	
12551	Sample	0.79	0.617	0.003		0.400	0.022	0.000		3.5	0.344	0.001	

1. \* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05)

Euv000

Amphipod, *Hyalella azteca*,  
Chronic Toxicity Test Results

Menzie-Cura  
Dead Creek  
99033

BTR 3615b  
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	Day 28 Data							Day 35 Data							Day 42 Data							Day 35 + 42 Reproduction Data							Day 42 Growth Data						
			#	Mean Proportion	Initial Boat Surviving	Total Dry Weight	# Organisms	Mean Wt. within Rep	Mean Wt. Reps I-L	#	Mean Proportion	Mean Survival	Number Neonates	#	Mean Proportion	Surviving Sample /	#	Mean Neonates	Mean Neonates	#	Mean Initial Pan Wt. (mg)	Total dry Wt. (mg)	Organisms within Rep	Mean Wt. Weighed (mg)	Mean Wt. Replicates A-H												
			Surviving	Surviving	(mg)	(mg)	Weighted	(mg)	(mg)	Surviving	Surviving		Neonates	Surviving	Sample / Rep	Neonates	Neonates / Female	Neonates / Sample	Total #	# Females / Rep	Neonates / Female	Neonates / Sample	Total #	Total dry Wt. (mg)	Organisms within Rep	Mean Wt. Weighed (mg)	Mean Wt. Replicates A-H										
12552	A	10	8	0.80						7	0.70	0	0	0	0.00	0	0	0	0	3	0.0	21.20	23.07	7	0.267												
	B	10	2	0.20						0	0.00	0	0	0	0.00	0	0	0	0	0	0.0	0.00	0	0.000													
	C	10	8	0.80						6	0.60	0	6	0.60	0	0	0	1	0.0	28.72	28.36	6	0.273														
	D	10	7	0.70						6	0.60	3	6	0.60	0	3	3	1.0	26.58	27.95	6	0.232															
	E	10	5	0.50						5	0.50	1	4	0.40	6	7	2	3.5	25.01	26.19	4	0.295															
	F	10	5	0.50						5	0.50	0	4	0.40	0	0	4	0.0	27.23	28.16	4	0.213															
	G	10	8	0.80						5	0.50	0	3	0.30	0	0	2	0.0	28.10	28.79	3	0.230															
	H	10	7	0.70						7	0.70	0.51	2	7	0.70	0.46	0	2	4	0.5	0.6	26.31	28.55	7	0.320	0.231											
	I	10	4	0.40	24.28	26.97	4	0.672																													
	J	10	3	0.30	23.53	26.46	3	0.977																													
	K	10	4	0.40	24.82	29.45	4	1.208																													
	L	10	5	0.50	0.55	29.02	34.38	5	1.072	0.982																											
12558	A	10	6	0.60						6	0.60	11	5	0.50	6	19	2	9.5	23.82	28.51	5	0.538															
	B	10	10	1.00						10	1.00	17	10	1.00	18	35	7	5.0	23.93	28.05	10	0.412															
	C	10	7	0.70						7	0.70	3	6	0.60	3	6	2	3.0	21.63	24.42	6	0.455															
	D	10	7	0.70						7	0.70	3	7	0.70	16	21	5	4.2	21.47	24.02	7	0.344															
	E	10	10	1.00						10	1.00	0	10	1.00	9	9	5	1.8	22.04	25.98	10	0.394															
	F	10	11	1.10						11	1.10	2	10	1.00	0	2	5	0.4	27.01	31.05	10	0.404															
	G	10	10	1.00						10	1.00	4	10	1.00	7	11	6	1.8	25.41	29.37	10	0.396															
	H	10	7	0.70						7	0.70	0.65	1	7	0.70	0.81	29	30	5	6.0	4.0	27.51	30.67	7	0.451	0.428											
	I	10	10	1.00	26.35	32.15	10	0.580																													
	J	10	8	0.80	21.83	27.15	5	1.064																													
	K	10	9	0.90	26.99	31.65	9	0.518																													
	L	10	9	0.90	0.87	27.82	32.98	8	0.574	0.684																											
12551	A	10	10	1.00						10	1.00	16	10	1.00	7	23	7	3.3	23.88	27.37	10	0.371															
	B	10	9	0.90						8	0.80	7	9	0.90	21	28	5	5.6	22.74	26.67	9	0.437															
	C	10	-	-						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
	D	10	10	1.00						9	0.90	3	9	0.90	14	17	8	2.1	27.84	31.09	9	0.361															
	E	10	6	0.60						6	0.60	1	5	0.50	5	6	3	2.0	27.37	29.21	5	0.368															
	F	10	9	0.90						8	0.80	7	8	0.80	12	19	6	3.2	27.92	31.04	8	0.390															
	G	10	7	0.70						6	0.60	10	6	0.60	9	19	3	6.3	22.35	24.84	6	0.432															
	H	10	8	0.80						8	0.80	0.78	1	8	0.80	0.78	5	6	3	2.0	3.5	27.31	30.82	8	0.439	0.400											
	I	10	6	0.60	24.87	28.64	6	0.612																													
	J	10	9	0.90	23.15	29.29	9	0.682																													
	K	10	6	0.60	24.90	29.05	6	0.825																													
	L	10	8	0.80	0.80	22.98	29.41	8	0.804	0.731																											
	V00000																																				

\* Replicate excluded from analysis. See Protocol Deviations.

RH3  
2/23

**Summary of Statistical Tests and Probabilities**

BTR:

3622

		Survival				Growth				Neonate Production			
		Proportion Surviving	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1,3</sup>	Mean Weight(mg)	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1,3</sup>	Mean Neonates/ Female	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1,3</sup>
<b>Day 28</b>													
12615	Control	0.62				0.296							
12589	Sample	0.23	0.332	0.001	*	0.255	0.034	0.363					
12590	Sample	0.22	0.083	0.010	*	0.723	0.001	0.120					
12592	Sample	0.49	0.122	0.178		0.304	0.031	0.472					
12593	Sample	0.88	0.030	0.000		0.481	0.493	0.001					
<b>Day 35</b>													
12615	Control	0.36											
12589	Sample	0.08	0.515	0.001	*								
12590	Sample	0.26	0.138	0.200									
12592	Sample	0.40	0.159	0.364									
12593	Sample	0.89	0.066	0.000									
<b>Day 42</b>													
12615	Control	0.33				0.299				1.8			
12589	Sample	0.08	0.689	0.001	*	0.084	0.168	0.000	*	0.0	NA <sup>2</sup>	0.032	*
12590	Sample	0.26	0.087	0.271		0.195	0.030	0.066		0.1	0.000	0.037	*
12592	Sample	0.39	0.082	0.316		0.234	0.833	0.032	*	0.0	NA <sup>2</sup>	0.032	*
12593	Sample	0.85	0.382	0.000		0.348	0.338	0.053		1.6	0.192	0.434	

1. \* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

2. There were not enough sample and/or control response variability to conduct a meaningful F-Test.

3. If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal variances.

000000  
G1

Amphipod, *Hyalella azteca*,  
Chronic Toxicity Test Results

Menzie-Cura  
Dead Creek  
99033

BTR 3622  
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	Day 28 Data							Day 35 Data				Day 42 Data				Day 35 + 42 Reproduction Data				Day 42 Growth Data			
			# Surviving	Mean Proportion Surviving	Initial Biol Weight (mg)	Total Dry Weight (mg)	# Organisms within Rep	Mean Wt. (mg)	Mean Wt. Reps I-L (mg)	# Surviving	Mean Proportion Surviving	Mean Survival	Number Neonates	# Surviving	Mean Proportion Surviving	Mean Survival / Sample	# Neonates	Total # Neonates / Rep	# Females / Female	Mean Neonates / Sample	Initial Pan Wt. (mg)	Total dry Wt. (mg)	Organisms within Rep	Mean Wt. Replicated A-H (mg)	
12615	A	10	9	0.90						2	0.20		0	2	0.20		0	0	2	0.0	30.50	31.25	2	0.375	
	B	10	5	0.50						3	0.30		0	3	0.30		4	4	2	2.0	25.66	26.66	3	0.400	
	C	10	2	0.20						1	0.10		0	1	0.10		0	0	0	0.0	26.74	27.02	1	0.280	
	D	10	9	0.90						5	0.50		8	5	0.50		2	11	4	2.8	27.47	28.60	5	0.226	
	E	10	3	0.30						2	0.20		0	2	0.20		0	0	2	0.0	28.58	27.03	2	0.225	
	F	10	6	0.60						6	0.60		7	6	0.60		0	7	3	2.3	26.59	28.16	6	0.262	
	G	10	5	0.50						5	0.50		0	3	0.30		0	0	2	0.0	25.45	26.28	3	0.277	
	H	10	6	0.60						5	0.50	0.36	12	4	0.40	0.33	10	22	3	7.3	1.8	27.47	28.85	4	0.345
	I	10	9	0.90	26.73	29.59	9	0.318																	
	J	10	8	0.80	26.74	28.53	8	0.224																	
	K	10	5	0.50	23.87	25.29	5	0.324																	
	L	10	7	0.70	0.62	25.89	27.79	6	0.317	0.296															
12589	A	10	0	0.00						0	0.00		0	0	0.00		0	0	0	0.0	0.00	0.00	0	0.000	
	B	10	3	0.30						2	0.20		0	2	0.20		0	0	2	0.0	24.60	25.01	2	0.208	
	C	10	2	0.20						2	0.20		0	2	0.20		0	0	2	0.0	27.30	27.77	2	0.233	
	D	10	0	0.00						0	0.00		0	0	0.00		0	0	0	0.0	0.00	0.00	0	0.000	
	E	10	0	0.00						0	0.00		0	0	0.00		0	0	0	0.0	0.00	0.00	0	0.000	
	F	10	2	0.20						2	0.20		0	2	0.20		0	0	2	0.0	22.29	22.75	2	0.230	
	G	10	0	0.00						0	0.00		0	0	0.00		0	0	0	0.0	0.00	0.00	0	0.000	
	H	10	0	0.00						0	0.00	0.06	0	0	0.00	0.06	0	0	0	0.0	0.00	0.00	0	0.000	
	I	10	0	0.00	0.00	0.00	0	0.000																	
	J	10	7	0.70	28.50	30.22	7	0.246																	
	K	10	5	0.50	29.67	32.31	5	0.528																	
	L	10	8	0.80	0.23	27.38	29.35	8	0.246	0.255															
12590	A	10	3	0.30						3	0.30		0	3	0.30		0	0	1	0.0	24.92	25.88	3	0.323	
	B	10	0	0.00						0	0.00		0	0	0.00		0	0	0	0.0	0.00	0.00	0	0.000	
	C	10	2	0.20						2	0.20		0	2	0.20		0	0	0	0.0	27.51	28.15	2	0.320	
	D	10	0	0.00						0	0.00		0	0	0.00		0	0	0	0.0	0.00	0.00	0	0.000	
	E	10	0	0.00						0	0.00		0	0	0.00		0	0	0	0.0	0.00	0.00	0	0.000	
	F	10	10	1.00						9	0.90		0	9	0.90		3	3	5	0.6	28.80	31.72	9	0.325	
	G	10	3	0.30						3	0.30		0	3	0.30		0	0	1	0.0	23.97	25.02	3	0.350	
	H	10	4	0.40						4	0.40	0.26	0	4	0.40	0.26	0	0	1	0.0	0.1	27.22	28.18	4	0.243
	I	10	1	0.10	25.20	26.50	1	1.300																	
	J	10	1	0.10	23.74	24.61	1	0.670																	
	K	10	-	-	-	-	-	-																	
	L	10	0	0.00	0.22	0.00	0	0.000	0.723																
12592	A	10	10	1.00						10	1.00		0	10	1.00		0	7	0	0.0	25.08	28.09	10	0.301	
	B	10	5	0.50						4	0.40		0	4	0.40		0	3	0	0.0	25.94	26.84	4	0.225	
	C	10	1	0.10						1	0.10		0	1	0.10		0	1	0	0.0	26.66	26.97	1	0.310	
	D	10	5	0.50						4	0.40		0	4	0.40		0	3	0	0.0	27.25	28.12	4	0.218	
	E	10	2	0.20						2	0.20		0	2	0.20		0	2	0	0.0	28.52	28.9	2	0.190	
	F	10	2	0.20						2	0.20		0	2	0.20		0	2	0	0.0	29.70	30.13	2	0.215	
	G	10	2	0.20						2	0.20		0	1	0.10		0	1	0	0.0	26.35	26.48	1	0.130	
	H	10	9	0.90						7	0.70	0.40	0	7	0.70	0.39	0	5	0	0.0	25.90	27.90	7	0.286	
	I	10	0	0.00	0.00	0.00	0	0.000																	
	J	10	10	1.00	24.69	30.06	10	0.537																	
	K	10	7	0.70	29.48	31.77	7	0.327																	
	L	10	6	0.60	0.49	24.01	28.12	6	0.352	0.304															
12593	A	10	9	0.90						9	0.90		0	9	0.90		2	5	0	0.4	28.41	31.99	9	0.368	
	B	10	9	0.90						9	0.90		0	8	0.80		0	2	0	0.0	28.44	30.69	8	0.281	
	C	10	8	0.80						8	0.80		0	7	0.70		0	3	0	0.0	23.26	25.78	7	0.361	
	D	10	10	1.00						9	0.90		4	9	0.90		7	11	5	2.2	22.86	26.28	9	0.380	
	E	10	8	0.80						8	0.80		7	8	0.80		11	18	5	3.6	28.82	31.84	8	0.378	
	F	10	9	0.90						9	0.90		9	9	0.90		10	19	5	3.8	25.77	29.79	9	0.336	
	G	10	10	1.00						10	1.00		0	10	1.00		9	9	6	1.5	25.81	29.54	10	0.373	
	H	10	9	0.90						9	0.90	0.89	0	8	0.80	0.85	3	3	2	1.5	1.6	27.03	29.26	8	0.279
	I	10	9	0.90	23.03	27.51	9	0.498																	
	J	10	7	0.70	24.93	28.08	7	0.450																	
	K	10	9	0.90	24.19	28.64	9	0.494																	
	L	10	-	-	0.88	-	-	-	0.481																

\* Replicate excluded from analysis. See Protocol Deviations.

RAB  
12/23

**Summary of Statistical Tests and Probabilities**

BTR: 3269

		Survival				Growth				Neonate Production			
		Proportion Surviving	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant	Mean Weight(mg)	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant	Mean Neonates/ Female	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant
<b>Day 28</b>													
12615	Control	0.62				0.296							
12609	Sample	0.72	0.723	0.140		0.688	0.490	0.000					
12610	Sample	0.97	0.000	0.000		0.612	0.333	0.000					
<b>Day 35</b>													
12615	Control	0.36											
12609	Sample	0.63	0.509	0.004									
12610	Sample	0.94	0.039	0.000									
<b>Day 42</b>													
12615	Control	0.33				0.299				1.8			
12609	Sample	0.56	0.718	0.011		0.660	0.026	0.000		9.5	0.054	0.002	
12610	Sample	0.91	0.195	0.000		0.462	0.395	0.000		4.6	0.532	0.043	

1. A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

200000

## **Amphipod, *Hyalella azteca*, Chronic Toxicity Test Results**

**Menzie-Cura  
Dead Creek  
99033**

BTR 3629

\* Replicate excluded from analysis. See Protocol Deviations.

RHIB  
2/23

### Summary of Statistical Tests and Probabilities

BTR: 3629

		Survival				Growth				Neonate Production			
		Proportion Surviving	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1,2</sup>	Mean Weight(mg)	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant	Mean Neonates/ Female	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant
<b>Day 28</b>													
12622	Control	0.55				0.501							
12611	Sample	0.67	0.749	0.183		0.569	0.446	0.282					
12612	Sample	0.93	0.010	0.000		0.594	0.381	0.107					
12613	Sample	0.89	0.002	0.001		0.636	0.485	0.129					
12614	Sample	0.95	0.001	0.000		0.470	0.644	0.347					
<b>Day 35</b>													
12622	Control	0.38											
12611	Sample	0.53	0.438	0.165									
12612	Sample	0.88	0.460	0.000									
12613	Sample	0.80	0.491	0.001									
12614	Sample	0.86	0.205	0.000									
<b>Day 42</b>													
12622	Control	0.35				0.377				4.0			
12611	Sample	0.50	0.381	0.171		0.369	0.054	0.453		3.2	0.829	0.330	
12612	Sample	0.83	0.335	0.000		0.380	0.879	0.468		4.1	0.068	0.471	
12613	Sample	0.75	0.866	0.002		0.423	0.525	0.161		4.2	0.461	0.448	
12614	Sample	0.84	0.176	0.000		0.322	0.136	0.049	*	5.3	0.143	0.182	

1. \* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

2. If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal variances.

## **Amphipod, *Hyalella azteca*, Chronic Toxicity Test Results**

**Menzie-Cura  
Dead Creek  
99033**

BTR 3629  
Aquatec Biological Sciences

RHB  
12/2-

### Summary of Statistical Tests and Probabilities

BTR: 3633

		Survival				Growth				Neonate Production			
		F-Test Proportion Surviving	T-Test Equal Variance	F-Test Statistical Probability	T-Test Statistically Significant <sup>1,2</sup>	F-Test Average Weight(mg)	T-Test Equal Variance	F-Test Statistical Probability	T-Test Statistically Significant <sup>1</sup>	Mean Neonates/ Female	F-Test Equal Variance	T-Test Statistical Probability	T-Test Statistically Significant
<b>Day 28</b>													
12622	Control	0.55				0.501							
12638	Sample	0.82	0.203	0.006		0.563	0.740	0.219					
12639	Sample	0.91	0.007	0.000		0.639	0.786	0.060					
12640	Sample	0.90	0.007	0.001		0.554	0.620	0.245					
12641	Sample	0.89	0.011	0.001		0.661	0.912	0.055					
<b>Day 35</b>													
12622	Control	0.38											
12638	Sample	0.74	0.728	0.003									
12639	Sample	0.89	0.190	0.000									
12640	Sample	0.74	0.005	0.002									
12641	Sample	0.85	0.116	0.000									
<b>Day 42</b>													
12622	Control	0.35				0.377				4.0			
12638	Sample	0.73	0.550	0.002		0.390	0.372	0.394		4.3	0.271	0.418	
12639	Sample	0.84	0.342	0.000		0.397	0.024	0.260		4.8	0.081	0.269	
12640	Sample	0.70	0.036	0.002		0.447	0.876	0.051		3.8	0.440	0.470	
12641	Sample	0.76	0.215	0.001		0.406	0.400	0.202		4.8	0.107	0.277	

1. \* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

2. If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal variances.

TCCG

## **Amphipod, *Hyalella azteca*, Chronic Toxicity Test Results**

**Menzie-Cura  
Dead Creek  
99033**

BTR 3633

Aquatec Biological Sciences

RHB  
12/23

### Summary of Statistical Tests and Probabilities

BTR:

3641

		Survival				Growth				Neonate Production			
		Proportion Surviving	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1</sup>	Mean Weight(mg)	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1,2</sup>	Mean Neonates/ Female	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1</sup>
<u>Day 28</u>													
12668	Control	0.73				0.477							
12664	Sample	0.90	0.559	0.012		0.443	0.439	0.312					
12665	Sample	0.89	0.237	0.014		0.648	0.940	0.036					
12666	Sample	0.70	0.780	0.333		0.613	0.992	0.070					
12671	Sample	0.87	0.334	0.034		0.458	0.423	0.389					

### Day 35

12668	Control	0.65											
12664	Sample	0.83	0.763	0.046									
12665	Sample	0.85	0.521	0.030									
12666	Sample	0.64	0.786	0.438									
12671	Sample	0.85	0.480	0.022									

### Day 42

12668	Control	0.59				0.293				2.2			
12664	Sample	0.79	0.942	0.014		0.346	0.270	0.266		2.6	0.684	0.316	
12665	Sample	0.80	0.965	0.014		0.498	0.018	0.009		6.2	0.067	0.001	
12666	Sample	0.65	0.449	0.249		0.459	0.573	0.001		2.3	0.015	0.483	
12671	Sample	0.83	0.744	0.007		0.351	0.133	0.196		3.4	0.135	0.113	

1. \* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

2 If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal variances.

0  
0  
0  
1  
1  
1  
3

Amphipod, *Hyalella azteca*,  
Chronic Toxicity Test Results

Menzie-Cura  
Dead Creek  
99033

BTR 3641  
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	Day 28 Data							Day 35 Data				Day 42 Data				Day 35 + 42 Reproduction Data					Day 42 Growth Data					
			#	Mean Proportion	Initial Boat Surviving	Dry Weight	# Organisms	Mean Wt. within Rep.	Mean Wt. Reps 1-L	#	Proportion	Mean Survival	Number	#	Mean Proportion	Survival / Sample	#	Total #	# Females	Mean Neonates / Female	Mean Neonates / Sample	Initial Pan Wt. (mg)	Total dry Wt. (mg)	Organisms Weighed	# Mean Wt. within Rep. [mg]	Mean Wt. Replicates A-H		
						[mg]	(mg)	(mg)	(mg)																			
12668	A	10	5	0.50						5	0.50		2	5	0.50		5	7	2	3.5		28.25	30.42	5	0.434			
	B	10	6	0.80						7	0.70		2	6	0.60		6	8	4	2.0		26.09	28.12	6	0.338			
	C	10	10	1.00						8	0.80		7	8	0.80		3	10	3	3.3		24.55	27.24	8	0.336			
	D	10	7	0.70						6	0.60		5	4	0.40		10	15	4	3.8		25.67	26.72	4	0.188			
	E	10	10	1.00						10	1.00		3	8	0.80		2	5	3	1.7		27.50	29.99	8	0.299			
	F	10	8	0.80						7	0.70		6	7	0.70		2	8	6	1.3		29.25	30.97	7	0.246			
	G	10	7	0.70						8	0.60		1	6	0.60		10	11	5	2.2		25.25	27.08	6	0.305			
	H	10	3	0.30						3	0.30	0.65	0	3	0.30	0.59	0	0	0	1	0.0	2.2		21.94	22.54	3	0.200	0.293
	I	10	6	0.60	25.87	29.55	6	0.613																				
	J	10	9	0.90	25.06	26.11	9	0.337																				
	K	10	8	0.80	24.52	28.37	8	0.481																				
	L	10	7	0.70	0.73	24.69	28.03	7	0.477	0.477																		
12664	A	10	10	1.00						9	0.90		6	8	0.80		2	8	6	1.3		29.54	31.78	8	0.280			
	B	10	10	1.00						10	1.00		2	9	0.90		10	12	5	2.4		26.05	29.02	8	0.330			
	C	10	9	0.90						9	0.90		3	8	0.80		7	10	3	3.3		27.56	30.32	8	0.345			
	D	10	10	1.00						8	0.80		11	9	0.80		11	22	4	5.5		23.47	26.28	8	0.351			
	E	10	9	0.90						8	0.80		0	8	0.80		1	1	2	0.5		27.84	31.00	8	0.395			
	F	10	10	1.00						9	0.90		8	9	0.90		9	17	7	2.4		28.82	32.11	9	0.368			
	G	10	4	0.40						4	0.40		2	4	0.40		4	6	3	2.0		26.87	28.21	4	0.310			
	H	10	9	0.90						9	0.90	0.83	4	9	0.90	0.78	11	15	5	3.0	2.6	28.78	32.33	9	0.394	0.346		
12665	A	10	10	1.00						9	0.90		2	9	0.90		34	36	4	9.0		24.60	29.03	8	0.492			
	B	10	10	1.00						11	1.10		12	11	1.10		21	33	4	8.3		27.27	31.53	11	0.387			
	C	10	10	1.00						10	1.00		13	9	0.90		35	48	6	8.0		25.55	29.79	9	0.471			
	D	10	9	0.90						9	0.90		3	8	0.80		12	15	4	3.8		25.62	29.65	8	0.504			
	E	10	6	0.60						8	0.80		6	8	0.80		8	14	5	2.9		25.09	30.44	8	0.569			
	F	10	7	0.70						7	0.70		2	7	0.70		25	27	3	9.0		23.39	28.12	7	0.676			
	G	10	9	0.90						8	0.90		8	6	0.60		7	16	5	3.2		27.37	30.85	6	0.580			
	H	10	7	0.70						6	0.60	0.85	6	6	0.60	0.80	10	16	3	5.3	8.2	27.28	28.50	6	0.203	0.498		
12666	A	10	4	0.40						3	0.30		0	3	0.30		1	1	2	0.5		29.11	30.66	3	0.623			
	B	10	8	0.80						8	0.80		8	8	0.80		6	12	6	0.0		23.50	27.15	8	0.456			
	C	10	10	1.00						9	0.90		2	10	1.00		3	5	5	1.0		24.21	26.96	10	0.375			
	D	10	5	0.50						5	0.50		2	5	0.50		6	8	2	4.0		24.04	26.16	5	0.424			
	E	10	5	0.50						5	0.50		1	5	0.50		1	2	3	0.7		28.74	30.81	5	0.414			
	F	10	8	0.80						7	0.70		10	7	0.70		11	21	2	10.5		25.62	28.55	7	0.419			
	G	10	6	0.60						8	0.80		0	6	0.80		1	1	4	0.3		27.14	30.97	8	0.478			
	H	10	6	0.60						6	0.60	0.64	0	6	0.60	0.65	4	4	3	1.3	2.3	30.88	33.77	6	0.482	0.459		
	I	10	9	0.90	25.63	29.81	9	0.476																				
	J	10	5	0.50	26.53	30.26	5	0.746																				
	K	10	6	0.60	24.43	29.49	8	0.563																				
	L	10	8	0.80	0.70	25.24	30.43	8	0.649	0.613																		
12671	A	10	6	0.60						5	0.50		2	4	0.40		7	8	2	4.5		29.18	30.58	4	0.350			
	B	10	9	0.90						8	0.90		2	8	0.80		12	14	2	7.0		28.67	31.47	8	0.350			
	C	10	10	1.00						10	1.00		6	10	1.00		25	31	6	5.2		24.30	27.45	10	0.315			
	D	10	9	0.90						9	0.90		0	9	0.90		0	0	2	0.0		21.15	24.57	9	0.380			
	E	10	9	0.90						9	0.90		10	9	0.90		12	22	5	4.4		28.82	31.84	9	0.369			
	F	10	10	1.00						8	0.90		4	9	0.90		2	6	3	2.0		25.20	28.33	9	0.348			
	G	10	9	0.90						8	0.90		3	9	0.90		13	16	5	3.2		30.01	33.62	9	0.401			
	H	10	10	1.00						8	0.80	0.85	1	8	0.80	0.83	0	1	1	1.0	3.4		24.77	27.14	8	0.296	0.351	
	I	10	9	0.90	23.50	28.14	9	0.518																				
	J	10	6	0.60	22.49	25.43	6	0.490																				
	K	10	8	0.80	26.25	29.96	8	0.464																				
	L	10	9	0.90	0.87	24.84	28.09	9	0.361	0.458																		

RAB  
12/23

Title: MC Dead Creek Ha Chronic - Prarie vs D,E,F - D28 S  
File: pdefha8s Transform: ARC SINE(SQUARE ROOT(Y))

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	8.7100	31.4600	49.6600	31.4600	8.7100
OBSERVED	10	28	41	49	2

Chi-Square = 17.0301 (p-value = 0.0019)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)  
= 9.488 (alpha = 0.05 , df = 4)

Data FAIL normality test (alpha = 0.01). Try another transformation.

Warning - The first three homogeneity tests are sensitive to non-normality and should not be performed with this data as is.

000015

Title: MC Dead Creek Ha Chronic - Prarie vs D,E,F - D28 S  
File: pdefha8s Transform: ARC SINE(SQUARE ROOT(Y))

Bartlett's Test for Homogeneity of Variance

---

Calculated B1 statistic = 31.9155 (p-value = 0.0002)

Data FAIL B1 homogeneity test at 0.01 level. Try another transformation.

---

Critical B = 21.6660 (alpha = 0.01, df = 9)  
= 16.9190 (alpha = 0.05, df = 9)

---

Using Average Degrees of Freedom  
(Based on average replicate size of 13.00)

Calculated B2 statistic = 35.8140 (p-value = 0.0000)

Data FAIL B2 homogeneity test at 0.01 level. Try another transformation.

000016

Title: MC Dead Creek Ha Chronic - Prarie vs D,E,F - D28 S  
File: pdefha8s Transform: ARC SINE(SQUARE ROOT(Y))

Wilcoxon's Rank Sum Test w/ Bonferroni Adjustment Ho: Control < Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	RANK SUM	CRIT. VALUE	REPS	SIG 0.05
1	12664/5	1.2601				
2	12549	1.2464	206.00	145	12	
3	12550	1.2104	203.00	145	12	
4	12551	1.1304	145.50	126	11	
5	12609	1.0301	138.00	145	12	*
6	12610	1.3676	246.50	126	11	
7	12611	0.9721	141.00	145	12	*
8	12639	1.2697	217.50	145	12	
9	12640	1.2582	211.50	145	12	
10	12641	1.2464	206.00	145	12	

Critical values are 1 tailed ( k = 9 )

000017

Title: MC Dead Creek HA Chronic - Prarie vs D,E,F - D28 G  
File: pdefha8g Transform: NO TRANSFORMATION

Shapiro - Wilk's Test for Normality

---

D = 0.6397  
W = 0.9566

Critical W = 0.9240 (alpha = 0.01 , N = 44)  
W = 0.9440 (alpha = 0.05 , N = 44)

---

Data PASS normality test (alpha = 0.01). Continue analysis.

000018

Title: MC Dead Creek HA Chronic - Prarie vs D,E,F - D28 G  
File: pdefha8g Transform: NO TRANSFORMATION

Bartlett's Test for Homogeneity of Variance

---

Calculated B1 statistic = 8.2709 (p-value = 0.5071)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

---

Critical B = 21.6660 (alpha = 0.01, df = 9)  
= 16.9190 (alpha = 0.05, df = 9)

---

Using Average Degrees of Freedom  
(Based on average replicate size of 4.40)

Calculated B2 statistic = 8.2198 (p-value = 0.5122)

Data PASS B2 homogeneity test at 0.01 level. Continue analysis.

000019

Title: MC Dead Creek HA Chronic - Prairie vs D,E,F - D28 G

File: pdefha8g

Transform:

NO TRANSFORMATION

ANOVA Table

SOURCE	DF	SS	MS	F
Between	9	0.1749	0.0194	1.0325
Within (Error)	34	0.6397	0.0188	
Total	43	0.8146		

(p-value = 0.4351)

Critical F = 2.9810 (alpha = 0.01, df = 9,34)  
= 2.1696 (alpha = 0.05, df = 9,34)

Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)

000920

Title: MC Dead Creek HA Chronic - Prairie vs D,E,F - D28 G  
 File: pdefha8g Transform: NO TRANSFORMATION

Bonferroni t-Test - TABLE 1 OF 2 Ho: Control < Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	t STAT	SIG 0.05
1	12664/5	0.5451	0.5451		
2	12549	0.5715	0.5715	-0.3140	
3	12550	0.6840	0.6840	-1.6533	
4	12551	0.7307	0.7307	-2.2099	
5	12609	0.6885	0.6885	-1.7069	
6	12610	0.6120	0.6120	-0.7961	
7	12611	0.5688	0.5688	-0.2813	
8	12639	0.6393	0.6393	-1.1206	
9	12640	0.5538	0.5538	-0.1027	
10	12641	0.6610	0.6610	-1.3795	

Bonferroni t critical value = 2.6857 (1 Tailed, alpha = 0.05, df = 9,34)

Title: MC Dead Creek HA Chronic - Prairie vs D,E,F - D28 G  
 File: pdefha8g Transform: NO TRANSFORMATION

Bonferroni t-Test - TABLE 2 OF 2 Ho: Control < Treatment

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	12664/5	8			
2	12549	4	0.2256	41.4	-0.0264
3	12550	4	0.2256	41.4	-0.1389
4	12551	4	0.2256	41.4	-0.1856
5	12609	4	0.2256	41.4	-0.1434
6	12610	4	0.2256	41.4	-0.0669
7	12611	4	0.2256	41.4	-0.0236
8	12639	4	0.2256	41.4	-0.0941
9	12640	4	0.2256	41.4	-0.0086
10	12641	4	0.2256	41.4	-0.1159

000021

Title: MC Dead Creek HA Chronic -Prarie vs D,E,F- D35 S  
File: pdefha5s Transform: ARC SINE(SQUARE ROOT(Y))

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	5.7620	20.8120	32.8520	20.8120	5.7620
OBSERVED	4	27	29	23	3

Chi-Square = 4.3843 (p-value = 0.3565)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)  
= 9.488 (alpha = 0.05 , df = 4)

Data PASS normality test (alpha = 0.01). Continue analysis.

000022

Title: MC Dead Creek HA Chronic -Prairie vs D,E,F- D35 S  
File: pdefha5s Transform: ARC SINE(SQUARE ROOT(Y))

Bartlett's Test for Homogeneity of Variance

---

Calculated B1 statistic = 23.1196 (p-value = 0.0059)

Data FAIL B1 homogeneity test at 0.01 level. Try another transformation.

---

Critical B = 21.6660 (alpha = 0.01, df = 9)  
= 16.9190 (alpha = 0.05, df = 9)

---

Using Average Degrees of Freedom  
(Based on average replicate size of 8.60)

Calculated B2 statistic = 23.8757 (p-value = 0.0045)

Data FAIL B2 homogeneity test at 0.01 level. Try another transformation.

000023

Title: MC Dead Creek HA Chronic -Prairie vs D,E,F- D35 S  
File: pdefha5s Transform: ARC SINE(SQUARE ROOT(Y))

Wilcoxon's Rank Sum Test w/ Bonferroni Adjustment Ho: Control < Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	RANK SUM	CRIT. VALUE	REPS	SIG 0.05
1	12664/5	1.1701				
2	12549	1.1872	100.50	58	8	
3	12550	1.1885	103.00	58	8	
4	12551	1.1078	70.50	45	7	
5	12609	0.9173	55.00	58	8	*
6	12610	1.3189	111.50	45	7	
7	12611	0.8058	59.50	58	8	
8	12639	1.2425	112.00	58	8	
9	12640	1.0360	65.00	58	8	
10	12641	1.1872	100.50	58	8	

Critical values are 1 tailed ( k = 9 )

000024

Title: MC Dead Creek HA Chronic -Prarie vs D,E,F- D42 S  
File: pdefha2s Transform: ARC SINE(SQUARE ROOT(Y))

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	5.7620	20.8120	32.8520	20.8120	5.7620
OBSERVED	8	17	29	30	2

Chi-Square = 8.5316 (p-value = 0.0739)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)  
= 9.488 (alpha = 0.05 , df = 4)

Data PASS normality test (alpha = 0.01). Continue analysis.

000025

Title: MC Dead Creek HA Chronic -Prarie vs D,E,F- D42 S  
File: pdefha2s Transform: ARC SINE(SQUARE ROOT(Y))

Bartlett's Test for Homogeneity of Variance

---

Calculated B1 statistic = 18.6741 (p-value = 0.0281)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

---

Critical B = 21.6660 (alpha = 0.01, df = 9)  
= 16.9190 (alpha = 0.05, df = 9)

---

Using Average Degrees of Freedom  
(Based on average replicate size of 8.60)

Calculated B2 statistic = 18.8506 (p-value = 0.0265)

Data PASS B2 homogeneity test at 0.01 level. Continue analysis.

0000?0

Title: MC Dead Creek HA Chronic -Prarie vs D,E,F- D42 S  
File: pdefha2s Transform: ARC SINE(SQUARE ROOT(Y))

ANOVA Table

SOURCE	DF	SS	MS	F
Between	9	1.6975	0.1886	4.1806
Within (Error)	76	3.4288	0.0451	
Total	85	5.1262		

(p-value = 0.0002)

Critical F = 2.6500 (alpha = 0.01, df = 9,76)  
= 2.0055 (alpha = 0.05, df = 9,76)

Since F > Critical F REJECT Ho: All equal (alpha = 0.05)

000027

Title: MC Dead Creek HA Chronic -Prarie vs D,E,F- D42 S  
 File: pdefha2s Transform: ARC SINE(SQUARE ROOT(Y))

Bonferroni t-Test - TABLE 1 OF 2 Ho: Control < Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	TRANS t STAT	SIG 0.05
1	12664/5	1.1093	0.7875		
2	12549	1.1695	0.8375	-0.6546	
3	12550	1.1627	0.8125	-0.5814	
4	12551	1.1137	0.7857	-0.0461	
5	12609	0.8508	0.5625	2.8103 *	
6	12610	1.2753	0.9143	-1.7254	
7	12611	0.7749	0.5000	3.6352 *	
8	12639	1.1767	0.8375	-0.7333	
9	12640	0.9958	0.7000	1.2336	
10	12641	1.0766	0.7625	0.3546	

Bonferroni t critical value = 2.6029 (1 Tailed, alpha = 0.05, df = 9,76)

Title: MC Dead Creek HA Chronic -Prarie vs D,E,F- D42 S  
 File: pdefha2s Transform: ARC SINE(SQUARE ROOT(Y))

Bonferroni t-Test - TABLE 2 OF 2 Ho: Control < Treatment

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	12664/5	16			
2	12549	8	0.2176	27.1	-0.0500
3	12550	8	0.2176	27.1	-0.0250
4	12551	7	0.2286	28.5	0.0018
5	12609	8	0.2176	27.1	0.2250
6	12610	7	0.2286	28.5	-0.1268
7	12611	8	0.2176	27.1	0.2875
8	12639	8	0.2176	27.1	-0.0500
9	12640	8	0.2176	27.1	0.0875
10	12641	8	0.2176	27.1	0.0250

000028

Title: MC Dead Creek HA Chronic -Prarie vs D,E,F- D42 G  
File: pdefha2g

Transform:

NO TRANSFORMATION

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	5.7620	20.8120	32.8520	20.8120	5.7620
OBSERVED	3	26	27	26	4

Chi-Square = 5.4917 (p-value = 0.2405)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)  
= 9.488 (alpha = 0.05 , df = 4)

Data PASS normality test (alpha = 0.01). Continue analysis.

000029

Title: MC Dead Creek HA Chronic -Prairie vs D,E,F- D42 G  
File: pdefha2g Transform: NO TRANSFORMATION

Bartlett's Test for Homogeneity of Variance

---

Calculated B1 statistic = 47.8450 (p-value = 0.0000)

Data FAIL B1 homogeneity test at 0.01 level. Try another transformation.

---

Critical B = 21.6660 (alpha = 0.01, df = 9)  
= 16.9190 (alpha = 0.05, df = 9)

---

Using Average Degrees of Freedom  
(Based on average replicate size of 8.60)

Calculated B2 statistic = 48.0193 (p-value = 0.0000)

Data FAIL B2 homogeneity test at 0.01 level. Try another transformation.

000030

Title: MC Dead Creek HA Chronic -Prarie vs D,E,F- D42 G

File: pdefha2g

Transform:

NO TRANSFORMATION

Wilcoxon's Rank Sum Test w/ Bonferroni Adjustment

Ho: Control < Treatment

GROUP	IDENTIFICATION	MEAN IN ORIGINAL UNITS	RANK SUM	CRIT. VALUE	REPS	SIG 0.05
1	12664/5	0.4219				
2	12549	0.4139	106.00	58	8	
3	12550	0.4280	113.50	58	8	
4	12551	0.3997	86.00	45	7	
5	12609	0.6602	147.00	58	8	
6	12610	0.4624	102.00	45	7	
7	12611	0.3694	95.50	58	8	
8	12639	0.3968	105.00	58	8	
9	12640	0.4471	114.00	58	8	
10	12641	0.4063	99.00	58	8	

Critical values are 1 tailed ( k = 9 )

000031

Title: MC Dead creek HA Chronic -Prarie vs D,E,F- D42 Neonates  
File: pdefha2n Transform: NO TRANSFORMATION

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	5.7620	20.8120	32.8520	20.8120	5.7620
OBSERVED	2	28	30	19	7

Chi-Square = 5.6101 (p-value = 0.2302)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)  
= 9.488 (alpha = 0.05 , df = 4)

Data PASS normality test (alpha = 0.01). Continue analysis.

0003?

Title: MC Dead creek HA Chronic -Prarie vs D,E,F- D42 Neonates  
File: pdefha2n Transform: NO TRANSFORMATION

Bartlett's Test for Homogeneity of Variance

---

Calculated B1 statistic = 17.5394 (p-value = 0.0409)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

---

Critical B = 21.6660 (alpha = 0.01, df = 9)  
= 16.9190 (alpha = 0.05, df = 9)

---

Using Average Degrees of Freedom  
(Based on average replicate size of 8.60)

Calculated B2 statistic = 17.8599 (p-value = 0.0368)

Data PASS B2 homogeneity test at 0.01 level. Continue analysis.

000033

Title: MC Dead creek HA Chronic -Prarie vs D,E,F- D42 Neonates  
File: pdefha2n Transform: NO TRANSFORMATION

ANOVA Table

SOURCE	DF	SS	MS	F
Between	9	226.8432	25.2048	2.8493
Within (Error)	76	672.2918	8.8459	
Total	85	899.1350		

(p-value = 0.0060)

Critical F = 2.6500 (alpha = 0.01, df = 9,76)  
= 2.0055 (alpha = 0.05, df = 9,76)

Since F > Critical F REJECT Ho: All equal (alpha = 0.05)

000734

Title: MC Dead creek HA Chronic -Prairie vs D,E,F- D42 Neonates  
 File: pdefha2n Transform: NO TRANSFORMATION

Bonferroni t-Test - TABLE 1 OF 2 Ho: Control < Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	t STAT	SIG 0.05
1	12664/5	4.3625	4.3625		
2	12549	5.0750	5.0750	-0.5532	
3	12550	3.9625	3.9625	0.3106	
4	12551	3.5000	3.5000	0.6399	
5	12609	9.5125	9.5125	-3.9988	
6	12610	4.5714	4.5714	-0.1550	
7	12611	3.2000	3.2000	0.9027	
8	12639	4.8500	4.8500	-0.3785	
9	12640	3.8375	3.8375	0.4076	
10	12641	4.8375	4.8375	-0.3688	

Bonferroni t critical value = 2.6029 (1 Tailed, alpha = 0.05, df = 9, 76)

Title: MC Dead creek HA Chronic -Prairie vs D,E,F- D42 Neonates  
 File: pdefha2n Transform: NO TRANSFORMATION

Bonferroni t-Test - TABLE 2 OF 2 Ho: Control < Treatment

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	12664/5	16			
2	12549	8	3.3521	76.8	-0.7125
3	12550	8	3.3521	76.8	0.4000
4	12551	7	3.5081	80.4	0.8625
5	12609	8	3.3521	76.8	-5.1500
6	12610	7	3.5081	80.4	-0.2089
7	12611	8	3.3521	76.8	1.1625
8	12639	8	3.3521	76.8	-0.4875
9	12640	8	3.3521	76.8	0.5250
10	12641	8	3.3521	76.8	-0.4750

000035

Title: MC Dead Creek HA Chonic - PDP vs Ref,B,C - D28s  
File: pdprha8s Transform: ARC SINE(SQUARE ROOT(Y))

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	7.7720	28.0720	44.3120	28.0720	7.7720
OBSERVED	5	29	44	34	4

Chi-Square = 4.1040 (p-value = 0.3921)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)  
= 9.488 (alpha = 0.05 , df = 4)

Data PASS normality test (alpha = 0.01). Continue analysis.

000036

Title: MC Dead Creek HA Chonic - PDP vs Ref,B,C - D28s  
File: pdprha8s Transform: ARC SINE(SQUARE ROOT(Y))

Bartlett's Test for Homogeneity of Variance

---

Calculated B1 statistic = 31.3315 (p-value = 0.0001)

Data FAIL B1 homogeneity test at 0.01 level. Try another transformation.

---

Critical B = 20.0902 (alpha = 0.01, df = 8)  
= 15.5073 (alpha = 0.05, df = 8)

---

Using Average Degrees of Freedom  
(Based on average replicate size of 12.89)

Calculated B2 statistic = 30.7628 (p-value = 0.0002)

Data FAIL B2 homogeneity test at 0.01 level. Try another transformation.

00037

Title: MC Dead Creek HA Chonic - PDP vs Ref,B,C - D28s  
File: pdprha8s Transform: ARC SINE(SQUARE ROOT(Y))

Wilcoxon's Rank Sum Test w/ Bonferroni Adjustment Ho: Control < Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	RANK SUM	CRIT. VALUE	REPS	SIG 0.05
1	12664/5	1.2601				
2	12666	1.0103	131.00	147	12	*
3	12589	0.4453	85.00	147	12	*
4	12590	0.4544	85.50	127	11	*
5	12592	0.7827	130.50	147	12	*
6	12593	1.2294	171.00	127	11	
7	12546	1.3047	190.00	108	10	
8	12547	1.2314	208.50	147	12	
9	12548	1.2765	243.50	147	12	

Critical values are 1 tailed ( k = 8 )

000038

Title: MC Dead Creek HA Chronic - Prarie vs Ref,B,C - D28 G  
File: pdprha8g Transform: NO TRANSFORMATION

Shapiro - Wilk's Test for Normality

---

D = 1.5059  
W = 0.9172

Critical W = 0.9160 (alpha = 0.01 , N = 38)  
W = 0.9380 (alpha = 0.05 , N = 38)

---

Data PASS normality test (alpha = 0.01). Continue analysis.

000030

Title: MC Dead Creek HA Chronic - Prarie vs Ref,B,C - D28 G  
File: pdprha8g Transform: NO TRANSFORMATION

Bartlett's Test for Homogeneity of Variance

---

Calculated B1 statistic = 27.7876 (p-value = 0.0005)

Data FAIL B1 homogeneity test at 0.01 level. Try another transformation.

---

Critical B = 20.0902 (alpha = 0.01, df = 8)  
= 15.5073 (alpha = 0.05, df = 8)

---

Using Average Degrees of Freedom  
(Based on average replicate size of 4.22)

Calculated B2 statistic = 33.1901 (p-value = 0.0001)

Data FAIL B2 homogeneity test at 0.01 level. Try another transformation.

000040

Title: MC Dead Creek HA Chronic - Prarie vs Ref,B,C - D28 G  
File: pdprha8g Transform: NO TRANSFORMATION

Wilcoxon's Rank Sum Test w/ Bonferroni Adjustment Ho: Control < Treatment

GROUP	IDENTIFICATION	MEAN IN ORIGINAL UNITS	RANK SUM	CRIT. VALUE	SIG REPS	SIG 0.05
1	12664/5	0.5451				
2	12666	0.6135	32.00	11	4	
3	12589	0.2550	14.00	11	4	
4	12590	0.7233	22.00	6	3	
5	12592	0.3040	14.00	11	4	
6	12593	0.4807	14.00	6	3	
7	12546	0.7662	39.00	11	4	
8	12547	0.4555	21.00	11	4	
9	12548	0.6565	32.00	11	4	

Critical values are 1 tailed ( k = 8 )

000^41

Title: MC Dead Creek HA Chronic - Prairie vs Ref, B,C - D35 S  
File: pdprha5s Transform: ARC SINE(SQUARE ROOT(Y))

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	5.2260	18.8760	29.7960	18.8760	5.2260
OBSERVED	4	18	38	13	5

Chi-Square = 4.4261 (p-value = 0.3514)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)  
= 9.488 (alpha = 0.05 , df = 4)

Data PASS normality test (alpha = 0.01). Continue analysis.

000042

Title: MC Dead Creek HA Chronic - Prarie vs Ref, B,C - D35 S  
File: pdprha5s Transform: ARC SINE(SQUARE ROOT(Y))

Bartlett's Test for Homogeneity of Variance

---

Calculated B1 statistic = 27.4848 (p-value = 0.0006)

Data FAIL B1 homogeneity test at 0.01 level. Try another transformation.

---

Critical B = 20.0902 (alpha = 0.01, df = 8)  
= 15.5073 (alpha = 0.05, df = 8)

---

Using Average Degrees of Freedom  
(Based on average replicate size of 8.67)

Calculated B2 statistic = 29.9957 (p-value = 0.0002)

Data FAIL B2 homogeneity test at 0.01 level. Try another transformation.

000043

Title: MC Dead Creek HA Chronic - Prarie vs Ref, B,C - D35 S  
File: pdprha5s Transform: ARC SINE(SQUARE ROOT(Y))

Wilcoxon's Rank Sum Test w/ Bonferroni Adjustment Ho: Control < Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	RANK SUM	CRIT. VALUE	REPS	SIG 0.05
1	12664/5	1.1701				
2	12666	0.9364	62.00	58	8	
3	12589	0.2731	36.00	58	8	*
4	12590	0.5041	46.50	58	8	*
5	12592	0.6857	54.00	58	8	*
6	12593	1.2339	110.50	58	8	
7	12546	1.2762	85.50	34	6	
8	12547	1.0760	76.50	58	8	
9	12548	1.1410	104.50	58	8	

Critical values are 1 tailed ( k = 8 )

000041

Title: MC Dead Creek HA Chronic - Parie vs Ref,B,C - D42 S  
File: pdprha2s Transform: ARC SINE(SQUARE ROOT(Y))

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	5.2260	18.8760	29.7960	18.8760	5.2260
OBSERVED	3	26	26	17	6

Chi-Square = 4.4215 (p-value = 0.3520)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)  
= 9.488 (alpha = 0.05 , df = 4)

Data PASS normality test (alpha = 0.01). Continue analysis.

000045

Title: MC Dead Creek HA Chronic - Parie vs Ref,B,C - D42 S  
File: pdprha2s Transform: ARC SINE(SQUARE ROOT(Y))

Bartlett's Test for Homogeneity of Variance

---

Calculated B1 statistic = 23.7121 (p-value = 0.0026)

Data FAIL B1 homogeneity test at 0.01 level. Try another transformation.

---

Critical B = 20.0902 (alpha = 0.01, df = 8)  
= 15.5073 (alpha = 0.05, df = 8)

---

Using Average Degrees of Freedom  
(Based on average replicate size of 8.67)

Calculated B2 statistic = 25.2070 (p-value = 0.0014)

Data FAIL B2 homogeneity test at 0.01 level. Try another transformation.

000046

Title: MC Dead Creek HA Chronic - Parie vs Ref,B,C - D42 S  
File: pdprha2s Transform: ARC SINE(SQUARE ROOT(Y))

Wilcoxon's Rank Sum Test w/ Bonferroni Adjustment Ho: Control < Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	RANK SUM	CRIT. VALUE	REPS	SIG 0.05
1	12664/5	1.1093				
2	12666	0.9567	73.00	58	8	
3	12589	0.2731	36.00	58	8	*
4	12590	0.5041	49.00	58	8	*
5	12592	0.6679	56.00	58	8	*
6	12593	1.1840	113.50	58	8	
7	12546	1.2017	85.00	34	6	
8	12547	1.0358	82.00	58	8	
9	12548	1.0753	102.50	58	8	

Critical values are 1 tailed ( k = 8 )

000047

Title: MC Dead Creek HA Chronic - Prairie vs Ref,B,C- D42 G  
File: pdprha2g Transform: NO TRANSFORMATION

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	5.2260	18.8760	29.7960	18.8760	5.2260
OBSERVED	4	25	22	23	4

Chi-Square = 5.5029 (p-value = 0.2395)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)  
= 9.488 (alpha = 0.05 , df = 4)

Data PASS normality test (alpha = 0.01). Continue analysis.

000048

Title: MC Dead Creek HA Chronic - Prarie vs Ref,B,C- D42 G  
File: pdprha2g Transform: NO TRANSFORMATION

Bartlett's Test for Homogeneity of Variance

---

Calculated B1 statistic = 20.8588 (p-value = 0.0075)

Data FAIL B1 homogeneity test at 0.01 level. Try another transformation.

---

Critical B = 20.0902 (alpha = 0.01, df = 8)  
= 15.5073 (alpha = 0.05, df = 8)

---

Using Average Degrees of Freedom  
(Based on average replicate size of 8.67)

Calculated B2 statistic = 19.7821 (p-value = 0.0112)

Data PASS B2 homogeneity test at 0.01 level. Continue analysis.

000049

Title: MC Dead Creek HA Chronic - Prarie vs Ref,B,C- D42 G  
File: pdprha2g Transform: NO TRANSFORMATION

Wilcoxon's Rank Sum Test w/ Bonferroni Adjustment Ho: Control < Treatment

GROUP	IDENTIFICATION	MEAN IN ORIGINAL UNITS	RANK SUM	CRIT. VALUE	REPS	SIG 0.05
1	12664/5	0.4221				
2	12666	0.4590	119.00	58	8	
3	12589	0.0839	39.00	58	8	*
4	12590	0.1951	51.00	58	8	*
5	12592	0.2344	45.50	58	8	*
6	12593	0.3483	80.00	58	8	
7	12546	0.5100	91.00	34	6	
8	12547	0.4895	126.00	58	8	
9	12548	0.4015	100.50	58	8	

Critical values are 1 tailed ( k = 8 )

000250

Title: MC Dead Creek HA Chronic - Prarie vs Ref,B,C - D42 Neon  
File: pdprha2n Transform: NO TRANSFORMATION

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	5.2260	18.8760	29.7960	18.8760	5.2260
OBSERVED	1	19	42	10	6

Chi-Square = 12.7051 (p-value = 0.0128)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)  
= 9.488 (alpha = 0.05 , df = 4)

Data PASS normality test (alpha = 0.01). Continue analysis.

000051

Title: MC Dead Creek HA Chronic - Prairie vs Ref,B,C - D42 Neon  
File: pdprha2n Transform: NO TRANSFORMATION

Hartley's Test for Homogeneity of Variance  
Bartlett's Test for Homogeneity of Variance

---

These two tests can not be performed because at least one group has zero variance.

Data FAIL to meet homogeneity of variance assumption.  
Additional transformations are useless.

---

000052

Title: MC Dead Creek HA Chronic - Prairie vs Ref,B,C - D42 Neon  
File: pdprha2n Transform: NO TRANSFORMATION

Wilcoxon's Rank Sum Test w/ Bonferroni Adjustment Ho: Control < Treatment

GROUP	IDENTIFICATION	MEAN IN ORIGINAL UNITS	RANK SUM	CRIT. VALUE	REPS	SIG 0.05
1	12664/5	4.3625				
2	12666	2.2875	66.00	58	8	
3	12589	0.0000	36.00	58	8	*
4	125900	0.0750	37.00	58	8	*
5	12592	0.0000	36.00	58	8	*
6	12593	1.6250	61.50	58	8	
7	12546	11.4500	116.00	34	6	
8	12547	3.7250	95.00	58	8	
9	12548	3.3250	93.00	58	8	

Critical values are 1 tailed ( k = 8 )

000053

Title: MC 99033 Chronic HA - Ref Borrow Pit to Borrow Pit Refs  
File: 3641ha8s Transform: ARC SINE(SQUARE ROOT(Y))

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	4.0200	14.5200	22.9200	14.5200	4.0200
OBSERVED	5	12	20	23	0

Chi-Square = 10.0208 (p-value = 0.0401)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)  
= 9.488 (alpha = 0.05 , df = 4)

Data PASS normality test (alpha = 0.01). Continue analysis.

000054

Title: MC 99033 Chronic HA - Ref Borrow Pit to Borrow Pit Refs  
File: 3641ha8s Transform: ARC SINE(SQUARE ROOT(Y))

Bartlett's Test for Homogeneity of Variance

---

Calculated B1 statistic = 7.8013 (p-value = 0.0991)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

---

Critical B = 13.2767 (alpha = 0.01, df = 4)  
= 9.4877 (alpha = 0.05, df = 4)

000055

Title: MC 99033 Chronic HA - Ref Borrow Pit to Borrow Pit Refs  
File: 3641ha8s Transform: ARC SINE(SQUARE ROOT(Y))

ANOVA Table

SOURCE	DF	SS	MS	F
Between	4	0.2459	0.0615	2.3931
Within (Error)	55	1.4127	0.0257	
Total	59	1.6585		

(p-value = 0.0616)

Critical F = 3.6809 (alpha = 0.01, df = 4,55)  
= 2.5397 (alpha = 0.05, df = 4,55)

Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)

000056

Title: MC 99033 Chronic HA - Ref Borrow Pit to Borrow Pit Refs  
 File: 3641ha8s Transform: ARC SINE(SQUARE ROOT(Y))

Dunnett's Test - TABLE 1 OF 2

Ho:Control < Treatment

GROUP	IDENTIFICATION	TRANSFORMED	MEAN CALCULATED IN	TRANS	SIG
		MEAN	ORIGINAL UNITS	T STAT	0.05
1	12671	1.2175	0.8667		
2	12612	1.3108	0.9333	-1.4264	
3	12613	1.2425	0.8917	-0.3824	
4	12638	1.1555	0.8167	0.9464	
5	12614	1.3323	0.9500	-1.7549	

Dunnett critical value = 2.2300 (1 Tailed, alpha = 0.05, df [used] = 4,40)  
 (Actual df = 4,55)

Title: MC 99033 Chronic HA - Ref Borrow Pit to Borrow Pit Refs  
 File: 3641ha8s Transform: ARC SINE(SQUARE ROOT(Y))

Dunnett's Test - TABLE 2 OF 2

Ho:Control < Treatment

GROUP	IDENTIFICATION	NUM OF	MIN SIG DIFF	% OF	DIFFERENCE
		REPS	(IN ORIG. UNITS)	CONTROL	FROM CONTROL
1	12671	12			
2	12612	12	0.1095	12.4	-0.0667
3	12613	12	0.1095	12.4	-0.0250
4	12638	12	0.1095	12.4	0.0500
5	12614	12	0.1095	12.4	-0.0833

000057

Title: MC Dead Creek Chronic HA - Borrow Pit - D28 G  
File: 3641HA8g

Transform:

NO TRANSFORMATION

Shapiro - Wilk's Test for Normality

---

D = 0.1769  
W = 0.9512

Critical W = 0.8680 (alpha = 0.01 , N = 20)  
W = 0.9050 (alpha = 0.05 , N = 20)

---

Data PASS normality test (alpha = 0.01). Continue analysis.

000058

Title: MC Dead Creek Chronic HA - Borrow Pit - D28 G  
File: 3641HA8g Transform: NO TRANSFORMATION

Bartlett's Test for Homogeneity of Variance

---

Calculated B1 statistic = 4.1758 (p-value = 0.3827)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

---

Critical B = 13.2767 (alpha = 0.01, df = 4)  
= 9.4877 (alpha = 0.05, df = 4)

000059

Title: MC Dead Creek Chronic HA - Borrow Pit - D28 G  
File: 3641HA8g Transform: NO TRANSFORMATION

ANOVA Table

SOURCE	DF	SS	MS	F
Between	4	0.0966	0.0242	2.0482
Within (Error)	15	0.1769	0.0118	
Total	19	0.2735		

(p-value = 0.1389)

Critical F = 4.8932 (alpha = 0.01, df = 4,15)  
= 3.0556 (alpha = 0.05, df = 4,15)

Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)

000060

Title: MC Dead Creek Chronic HA - Borrown Pit - D28 G

File: 3641HA8g

Transform:

NO TRANSFORMATION

Dunnett's Test - TABLE 1 OF 2

Ho:Control < Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG 0.05
1	12671	0.4578	0.4578		
2	12612	0.5943	0.5943	-1.7776	
3	12613	0.6358	0.6358	-2.3180	
4	12638	0.5633	0.5633	-1.3739	
5	12614	0.4705	0.4705	-0.1660	

Dunnett critical value = 2.3600 (1 Tailed, alpha = 0.05, df = 4,15)

Title: MC Dead Creek Chronic HA - Borrown Pit - D28 G

File: 3641HA8g

Transform:

NO TRANSFORMATION

Dunnett's Test - TABLE 2 OF 2

Ho:Control < Treatment

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	12671	4			
2	12612	4	0.1812	39.6	-0.1365
3	12613	4	0.1812	39.6	-0.1780
4	12638	4	0.1812	39.6	-0.1055
5	12614	4	0.1812	39.6	-0.0128

003361

Title: MC Dead Creek Chronic HA - Borrow Pit - D35 S  
File: 3641ha5s Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro - Wilk's Test for Normality

---

D = 1.4376

W = 0.9513

Critical W = 0.9190 (alpha = 0.01 , N = 40)

W = 0.9400 (alpha = 0.05 , N = 40)

---

Data PASS normality test (alpha = 0.01). Continue analysis.

00006?

Title: MC Dead Creek Chronic HA - Borrow Pit - D35 S  
File: 3641ha5s Transform: ARC SINE(SQUARE ROOT(Y))

Bartlett's Test for Homogeneity of Variance

---

Calculated B1 statistic = 1.0306 (p-value = 0.9051)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

---

Critical B = 13.2767 (alpha = 0.01, df = 4)  
= 9.4877 (alpha = 0.05, df = 4)

00063

Title: MC Dead Creek Chronic HA - Borrow Pit - D35 S  
File: 3641ha5s Transform: ARC SINE(SQUARE ROOT(Y))

ANOVA Table

SOURCE	DF	SS	MS	F
Between	4	0.1592	0.0398	0.9691
Within (Error)	35	1.4376	0.0411	
Total	39	1.5968		

(p-value = 0.4367)

Critical F = 3.9082 (alpha = 0.01, df = 4,35)  
= 2.6415 (alpha = 0.05, df = 4,35)

Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)

000064

Title: MC Dead Creek Chronic HA - Borrow Pit - D35 S  
File: 3641ha5s Transform: ARC SINE(SQUARE ROOT(Y))

Dunnett's Test - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	TRANS T STAT	SIG 0.05
1	12671	1.1937	0.8500		
2	12612	1.2320	0.8750	-0.3772	
3	12613	1.1279	0.8000	0.6493	
4	12638	1.0582	0.7375	1.3378	
5	12614	1.2076	0.8625	-0.1367	

Dunnett critical value = 2.2500 (1 Tailed, alpha = 0.05, df [used] = 4,30)  
(Actual df = 4,35)

Title: MC Dead Creek Chronic HA - Borrow Pit - D35 S  
File: 3641ha5s Transform: ARC SINE(SQUARE ROOT(Y))

Dunnett's Test - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	12671	8			
2	12612	8	0.1880	21.7	-0.0250
3	12613	8	0.1880	21.7	0.0500
4	12638	8	0.1880	21.7	0.1125
5	12614	8	0.1880	21.7	-0.0125

000005

Title: MC Dead Creek HA Chronic - Borrow Pit - D42 S  
File: 3641ha2s Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro - Wilk's Test for Normality

---

D = 1.5486  
W = 0.9444

Critical W = 0.9190 (alpha = 0.01 , N = 40)  
W = 0.9400 (alpha = 0.05 , N = 40)

---

Data PASS normality test (alpha = 0.01). Continue analysis.

000066

Title: MC Dead Creek HA Chronic - Borrow Pit - D42 S  
File: 3641ha2s Transform: ARC SINE(SQUARE ROOT(Y))

Bartlett's Test for Homogeneity of Variance

---

Calculated B1 statistic = 1.6357 (p-value = 0.8024)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

---

Critical B = 13.2767 (alpha = 0.01, df = 4)  
= 9.4877 (alpha = 0.05, df = 4)

000067

Title: MC Dead Creek HA Chronic - Borrow Pit - D42 S  
File: 3641ha2s Transform: ARC SINE(SQUARE ROOT(Y))

ANOVA Table

SOURCE	DF	SS	MS	F
Between	4	0.1207	0.0302	0.6818
Within (Error)	35	1.5486	0.0442	
Total	39	1.6693		

(p-value = 0.6093)

Critical F = 3.9082 (alpha = 0.01, df = 4,35)  
= 2.6415 (alpha = 0.05, df = 4,35)

Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)

000068

Title: MC Dead Creek HA Chronic - Borrow Pit - D42 S  
 File: 3641ha2s Transform: ARC SINE(SQUARE ROOT(Y))

Dunnett's Test - TABLE 1 OF 2

Ho:Control < Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	TRANS T STAT	SIG 0.05
1	12671	1.1634	0.8250		
2	12612	1.1590	0.8250	0.0421	
3	12613	1.0727	0.7500	0.8628	
4	12638	1.0383	0.7250	1.1891	
5	12614	1.1727	0.8375	-0.0885	

Dunnett critical value = 2.2500 (1 Tailed, alpha = 0.05, df [used] = 4,30)  
 (Actual df = 4,35)

Title: MC Dead Creek HA Chronic - Borrow Pit - D42 S  
 File: 3641ha2s Transform: ARC SINE(SQUARE ROOT(Y))

Dunnett's Test - TABLE 2 OF 2

Ho:Control < Treatment

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	12671	8			
2	12612	8	0.2035	24.1	0.0000
3	12613	8	0.2035	24.1	0.0750
4	12638	8	0.2035	24.1	0.1000
5	12614	8	0.2035	24.1	-0.0125

000069

Title: MC Dead Creek HA Chronic - Borrow Pit - D42 G  
File: 3641ha2g Transform: NO TRANSFORMATION

Shapiro - Wilk's Test for Normality

---

D = 0.2110  
W = 0.7981

Critical W = 0.9190 (alpha = 0.01 , N = 40)  
W = 0.9400 (alpha = 0.05 , N = 40)

---

Data FAIL normality test (alpha = 0.01). Try another transformation.

Warning - The first three homogeneity tests are sensitive to non-normality and should not be performed with this data as is.

000970

Title: MC Dead Creek HA Chronic - Borrow Pit - D42 G  
File: 3641ha2g Transform: NO TRANSFORMATION

Bartlett's Test for Homogeneity of Variance

---

Calculated B1 statistic = 12.0775 (p-value = 0.0168)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

---

Critical B = 13.2767 (alpha = 0.01, df = 4)  
= 9.4877 (alpha = 0.05, df = 4)

00071

Title: MC Dead Creek HA Chronic - Borrow Pit - D42 G

File: 3641ha2g

Transform:

NO TRANSFORMATION

Steel's Many-One Rank Test - Ho: Control < Treatment

GROUP	IDENTIFICATION	MEAN IN ORIGINAL UNITS	RANK SUM	CRIT. VALUE	DF	SIG 0.05
1	12671	0.3511				
2	12612	0.3804	74.00	47.00	8.00	
3	12613	0.4231	87.00	47.00	8.00	
4	12638	0.3904	73.00	47.00	8.00	
5	12614	0.3224	53.00	47.00	8.00	

Critical values are 1 tailed ( k = 4 )

000072

Title: MC Dead Creek HA Chronic - Borrow Pit - D42 Neonates  
File: 3641ha2n Transform: NO TRANSFORMATION

Shapiro - Wilk's Test for Normality

---

D = 171.0025  
W = 0.9663

Critical W = 0.9190 (alpha = 0.01 , N = 40)  
W = 0.9400 (alpha = 0.05 , N = 40)

---

Data PASS normality test (alpha = 0.01). Continue analysis.

000073

Title: MC Dead Creek HA Chronic - Borrow Pit - D42 Neonates  
File: 3641ha2n Transform: NO TRANSFORMATION

Bartlett's Test for Homogeneity of Variance

---

Calculated B1 statistic = 1.5641 (p-value = 0.8152)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

---

Critical B = 13.2767 (alpha = 0.01, df = 4)  
= 9.4877 (alpha = 0.05, df = 4)

000074

Title: MC Dead Creek HA Chronic - Borrow Pit - D42 Neonates  
File: 3641ha2n Transform: NO TRANSFORMATION

ANOVA Table

SOURCE	DF	SS	MS	F
Between	4	14.9375	3.7344	0.7643
Within (Error)	35	171.0025	4.8858	
Total	39	185.9400		

(p-value = 0.5556)

Critical F = 3.9082 (alpha = 0.01, df = 4, 35)  
= 2.6415 (alpha = 0.05, df = 4, 35)

Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)

000075

Title: MC Dead Creek HA Chronic - Borrow Pit - D42 Neonates  
 File: 3641ha2n Transform: NO TRANSFORMATION

Dunnett's Test - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED	MEAN CALCULATED IN	SIG	
		MEAN	ORIGINAL UNITS	T STAT	0.05
1	12671	3.4125	3.4125		
2	12612	4.0750	4.0750	-0.5994	
3	12613	4.1750	4.1750	-0.6899	
4	12638	4.2750	4.2750	-0.7804	
5	12614	5.3125	5.3125	-1.7192	

Dunnett critical value = 2.2500 (1 Tailed, alpha = 0.05, df [used] = 4,30)  
 (Actual df = 4,35)

Title: MC Dead Creek HA Chronic - Borrow Pit - D42 Neonates  
 File: 3641ha2n Transform: NO TRANSFORMATION

Dunnett's Test - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF	MIN SIG DIFF	% OF	DIFFERENCE
		REPS	(IN ORIG. UNITS)	CONTROL	FROM CONTROL
1	12671	8			
2	12612	8	2.4867	72.9	-0.6625
3	12613	8	2.4867	72.9	-0.7625
4	12638	8	2.4867	72.9	-0.8625
5	12614	8	2.4867	72.9	-1.9000

003076

**Results of  
*Chironomus tentans* Survival and Growth  
Sediment Toxicity Tests  
Conducted on Sediment Samples from  
Dead Creek / Sauget, Illinois**

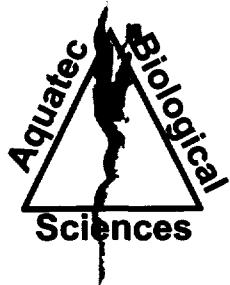
**Reference BTRs 3615, 3622, 3629, 3633, 3641, 3643**

**Prepared for:  
Menzie-Cura & Associates  
1 Courthouse Lane, Suite 2  
Chelmsford, MA 01824**



**Prepared by:  
Aquatec Biological Sciences  
75 Green Mountain Drive  
South Burlington, Vermont**

**December 1999**



# Aquatec Biological Sciences



Ecology



Environmental  
Toxicology



Natural Resource  
Assessments

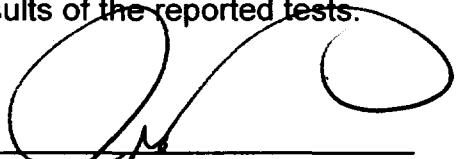


Microbiology

BTRs 3615, 3622, 3629, 3633, 3641, 3643

PROJECT: 99033

I have reviewed this data package, which was completed under my supervision. This data package is complete, and to the best of my ability, accurately reflects the conditions and the results of the reported tests.

  
John W. Williams  
Toxicity Laboratory Manager

12/14/99

Date

I have reviewed and discussed this data package with the responsible laboratory manager. Based on this review, the data package was, to the best of my knowledge and belief, conducted in accordance with established company quality assurance procedures.

  
Philip C. Downey, Ph.D.  
Director

12/14/99  
Date

## TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	1
INTRODUCTION.....	2
METHODS.....	2
PROTOCOL DEVIATIONS.....	3
RESULTS.....	4
QUALITY ASSURANCE .....	6

## LIST OF APPENDICES

- APPENDIX A: RESULTS OF WHOLE SEDIMENT TOXICITY TESTS
- APPENDIX B: CHAIN-OF-CUSTODY DOCUMENTATION
- APPENDIX C: LABORATORY DOCUMENTATION AND DATA ANALYSES FOR  
*Chironomus tentans* TOXICITY TESTS
- APPENDIX D: RESULTS OF STANDARD REFERENCE TOXICANT TESTS

## EXECUTIVE SUMMARY

**100.2CT Midge, *Chironomus tentans* 10-day Survival and Growth Test  
Conducted October 7 - October 20, 1999  
for Menzie-Cura & Associates  
Dead Creek Site**

Laboratory Sample ID	Client Sample ID	Mean Survival (%)	Mean Dry Weight (mg)
12546	BTOX-C-1	30 *	--
12547	BTOX-C-2	0 *	--
12548	BTOX-C-3	96	2.352
12549	BTOX-D-1	44 *	--
12550	BTOX-D-2	48 *	--
12551	BTOX-D-3	71 *	--
12552	Laboratory Control Sediment	98	2.558
12589	BTOX-B-1	0 *	--
12590	BTOX-B-1 (DUPE)	4 *	--
12591	BTOX-B-2	0 *	--
12592	BTOX-B-3	100 <sup>1</sup>	0.581 <sup>1</sup>
12593	BTOX-M	96 *	--
12609	E-1 Dead Creek	91 *	--
12610	E-2 Dead Creek	16 *	--
12615	Laboratory Control Sediment	100	1.922
12611	E-3 Dead Creek	97	2.240
12612	BP-1 Borrow Pit	64 *	--
12613	BP-1 Borrow Pit (DUPE)	40 *	--
12614	BP-3 Borrow Pit	53 *	--
12622	Laboratory Control Sediment	94	1.761
12638	BP-2 Borrow Pit	14 *	--
12639	F-1 Dead Creek Section F	31 *	--
12640	F-2 Dead Creek Section F	16 *	--
12641	F-3 Dead Creek Section F	10 *	--
12664	Prairie DuPont Creek	16 *	--
12665	Prairie DuPont Creek 2	55 *	--
12666	Reference Creek	13 *	--
12668	Laboratory Control Sediment	100	2.065
12671	Ref 2-2 Reference Borrow Pit	11 *	--

\* The response data were statistically significantly different from the corresponding laboratory control sediment ( $p \leq 0.05$ ).

-- When a statistically significant reduction in survival was detected, mean dry weight data were only reported in Appendix A (See Results).

<sup>1</sup> Indigenous *Chironomus tentans* were present in this sample, resulting in counts higher than the initial number. Statistical analysis of test data for Sample 12592 was not performed.

## **INTRODUCTION:**

Samples were received for toxicity testing at Aquatec Biological Sciences of 75 Green Mountain Drive, South Burlington, Vermont. Tests were conducted at Aquatec Biological Sciences. The results of the following tests are reported:

Client:	Menzie-Cura & Associates
Facility/Location:	Dead Creek / Sauget, IL
Initial Sampling Date:	October 4 - October 9, 1999
Testing Date:	October 7 - October 20 , 1999
Tests Conducted:	Midge, <i>Chironomus tentans</i> , 10-day Survival and Growth

## **METHODS:**

### **Toxicity Tests**

The procedures followed in conducting these toxicity tests were based on methods described by the USEPA (EPA 600/R-94/024). Specific test parameters for the *Chironomus tentans* whole sediment toxicity test are listed in Table 1. Testing was completed in four separate groupings based upon chronological sequencing from the time of sediment collection. The objective for the test groupings was to complete the 10-day acute tests prior to expiration of a 14-day sediment storage time so that subsequent chronic toxicity tests could be started within a 14-day time frame. The first testing group was initiated on October 7, 1999. The second testing group was initiated on October 8, 1999. The third testing group was initiated on October 9, 1999. The fourth testing group was initiated on October 10, 1999. A laboratory control (artificial sediment) was included with each testing group.

### **Sediment Preparation**

The samples were stored refrigerated and in the dark whenever they were not being used in preparation for testing. Sediments distributed in test beakers were examined for the presence of indigenous organisms which were removed when observed. Also, large pieces of vegetative material (e.g., leaf litter, sticks, grass) were removed. Qualitative observations regarding the sediment type and indigenous organisms removed were recorded. A laboratory

control sediment was used with each Sample Delivery Group. The laboratory control sediment (artificial sediment) was prepared following formulations specified in the USEPA protocols and then hydrated prior to distribution to test chambers. Sediments were then distributed to individual replicate test chambers, overlying water was added, and the overlying water renewal system was activated. The unused portion of each sample (in the original sample container) was returned to refrigerated storage.

### **Statistical Analysis**

Statistical comparisons were performed against the concurrent laboratory control. The growth measurement was based upon the average dry weight of surviving midge larvae per replicate, following the USEPA protocol for the test method. Statistical significance for any sample is based upon the most sensitive endpoint (survival or growth). An F-Test was performed to test for equality of variances between each sample comparison to the control. If variances were not significantly different, paired T-Tests with equal variances were used to determine whether there were significant reductions in mean survival (Arcsin transformed) and/or mean growth in each sample relative to the control. If the variance between a sample and control comparison was significantly different, paired T-Tests with unequal variances were used to determine significant reductions in mean survival and/or growth.

### **PROTOCOL DEVIATIONS:**

Surviving midge larvae in three test replicates (12640D, 12668A, and 12668B) were not included in the dry weight statistical analysis due to an apparent laboratory error.

Sample 12592 (BTOX-B-3) had greater than ten larvae recovered on Day 10 in seven of the eight test replicates. Several of the replicates had very high numbers (e.g., 18-28 larvae) recovered. Many of excess larvae were very small and appeared to be *Chironomus tentans*. This particular sample had an indigenous population of the test species which contributed to the final count because the test population and the indigenous population could not be easily differentiated. Statistical analysis of this sample (comparison to the Laboratory Control

Sample) was not performed due to the confounding presence of indigenous midge larvae. It was assumed that acute toxicity was not characteristic of this sample. This sediment sample was seived through a 0.3 mm mesh sieve prior to initiating subsequent chronic toxicity testing.

The following test replicates (12593C, 12615H, 12638G, and 12639A) had eleven larvae surviving when the test was ended. Proportion surviving was scored as 1.0 for these replicates.

The following replicates had slight inconsistencies in the number surviving larvae versus the number weighed: Replicate 12593F had nine surviving larvae and eight larvae weighed; Replicatee 12593G had 10 surviving larvae and nine larvae weighed; Replicate 12666 had three surviving larvae and one larvae weighed.

Large predacious indigenous organisms (dragonfly nymphs and a leech) were found in some test replicates on Day 10. These replicates had no surviving midge larvae, possibly due to predation. The affected test replicates included 12547B, 12547F, 12551E, 12611G, and 12640F. These replicates were excluded from the statistical data analysis.

## RESULTS:

Summary result tabulations for the *Chironomus tentans* whole sediment toxicity tests are located in Appendix A.

Group 1 Test Results: This group included Samples 12546 (BTOX-C-1), 12547, (BTOX-C-2), 12548 (BTOX-C-3), 12549 (BTOX-D-1), 12550 (BTOX-D-2), and 12551 (BTOX-D-3). Samples 12546 (BTOX-C-1), 12547, (BTOX-C-2), 12549 (BTOX-D-1), 12550 (BTOX-D-2), and 12551 (BTOX-D-3) had survival responses that were significantly less than the Laboratory Control Sample (12552) which had 98 percent survival. Survival and growth responses for Sample 12548 (BTOX-C-3) were not significantly less than the Laboratory Control Sample. Samples 12546, 12547, and 12549 exhibited acute toxicity and were not scheduled for chronic toxicity testing. Samples 12548, 12550, and 12551 were scheduled for chronic toxicity testing.

Group 2 Test Results: This group included Samples 12589 (BTOX -B-1), 12590 (BTOX-B-1 duplicate), 12591 (BTOX-B-2), 12592 (BTOX-B-3), 12593 (BTOX-M), 12609 (E-1 Dead Creek), and 12610 (E-2 Dead Creek). Survival responses for samples 12589 (BTOX -B-1), 12590 (BTOX-B-1 duplicate), 12591 (BTOX-B-2), 12593 (BTOX-M), 12609 (E-1 Dead Creek), and 12610 (E-2 Dead Creek) were significantly less than the Laboratory Control Sample (12615). The Laboratory Control Sample for this testing group had 100 percent survival, hence no statistical variability in the survival response data. This lack of statistical variability may have had the effect of increasing the sensitivity of the statistical analysis such that samples with high survival (Samples 12593 and 12609 had 96 percent and 91 percent survival, respectively.) were shown to be significantly lower than the Laboratory Control Sample response. Samples 12589, 12590, 12591, and 12610 exhibited acute toxicity and were not scheduled for chronic toxicity testing. Samples 12592, 12593, and 12609 were scheduled for chronic toxicity testing.

Sample 12592 (BTOX-B-3) had indigenous *Chironomus tentans* larvae present in the sediment which confounded the final Day 10 survival counts. Statistical analysis of acute data for this sample was not performed.

Group 3 Test Results: This group included samples 12611 (E-3 Dead Creek), 12612, (BP-1 Borrow Pit), 12613 (BP-1 Borrow Pit duplicate), 12614 (BP-3 Borrow Pit), 12638 (BP-2 Borrow Pit), 12639 (F-1 Dead Creek Section F), 12640 (F-2 Dead Creek Section F), and 12641 (F-3 Dead Creek Section F). Survival responses for samples 12612, 12613, 12614, 12638, 12639, 12640, and 12641 were significantly less than the Laboratory Control sample (12622) which had 94 percent survival. The responses observed for Sample 12611 were not significantly less than the Laboratory Control. Samples 12638, 12639, 12640, and 12641 exhibited acute toxicity and were not scheduled for chronic toxicity testing. Samples 12611, 12612, 12613, and 12614 were scheduled for chronic toxicity testing.

Group 4 Test Results: This group included samples 12664 (Prairie Du Pont Creek), 12665 (Prairie Du Pont Creek 2), 12666 (Reference Creek), and 12671 (Ref 2-2 Borrow Pit). Survival responses for all four samples were significantly less than the Laboratory Control sample

(12668) which had 100 percent survival. Only sample 12666 exhibited a growth responses that was significantly less than the Laboratory Control. Sample 12665 was scheduled for chronic toxicity testing. Samples 12664, 12666, and 12671 exhibited acute toxicity (defined as <50% survival and/or statistically lower than the control) and were not scheduled for chronic toxicity testing.

Total Ammonia and Sulfide: Total ammonia concentrations were less than 25mg/L in porewater and less than 7 mg/L in overlying water. Total sulfide was not detected (<0.5mg/L) in any porewater samples, therefore, testing for sulfide in overlying water was not conducted.

**QUALITY ASSURANCE:**

A standard reference toxicant SRT test was conducted for each batch *Chironomus tentans* used in testing. The resulting LC50 values fell within control chart limits and were viewed as being acceptable.

**Table 1. Test Conditions for the Midge (*Chironomus tentans*) 10-day Whole Sediment Survival and Growth Toxicity Test.**

---

ASSOCIATED PROTOCOL: EPA, 1994. *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates Method 100.1* (EPA/600/R-94/024).

1. Test type:	Whole-sediment toxicity (static renewal)
2. Temperature:	23 $\pm$ 1 °C
3. Light quality:	Wide-spectrum fluorescent lights
4. Light illuminance:	500 to 1000 lux
5. Photoperiod:	16 hr. light, 8 hr. dark
6. Test chamber size:	300 mL beaker
7. Sediment volume:	100 mL (distributed to test chambers on the day prior to administration of test organisms)
8. Overlying water volume:	175 mL
9. Renewal of overlying water:	Twice daily
10. Age of test organism:	3rd instar or younger
11. Number of organisms/test chamber:	10
12. Number of replicate test chambers / treatment:	8
13. Feeding regime:	1.5 mL Tetrafin suspension daily (1.5 mL contains 4.0 mg of dry solids)
14. Aeration:	None unless dissolved oxygen in overlying water drops below 40 % saturation or demonstrates a declining trend during daily monitoring. If required, aeration will be sufficiently gentle to prevent resuspension of sediments to the overlying water. Additional water renewals may be used in lieu of aeration.

---

**Table 1. Test Conditions for the Midge (*Chironomus tentans*) 10-day Whole Sediment Survival and Growth Toxicity Test (continued).**

15. Overlying water:	Reconstituted water (EPA/600/R-94/024)
16. Control sediment:	Formulated sediment (EPA/600/R-94/024, Section 7.2.3.2)
17. Test chamber cleaning:	None
18. Monitoring:	
Overlying water	
Temperature	Daily
Dissolved oxygen	Daily
pH	Beginning and end of test
Conductivity	Beginning and end of test
Alkalinity	Beginning and end of test
Hardness	Beginning and end of test
Ammonia	Beginning and end of test
Organism behavior	Within 2 hours to remove "floaters" Daily
19. Test duration:	10 days.
20. End points:	Survival and growth (dry weight of larvae to 0.01 mg, 60°C overnight), by replicate
21. Reference toxicant:	96-h acute, water only (KCl)
22. Test acceptability:	Minimum mean control survival of 70% and performance-based criteria outlined in EPA/600/R-94/024, Table 12.3
23. Statistical analysis and data interpretation:	Arc-sine (square-root) transformation of survival data. F-Tests were performed for equality of variance. Paired T-Tests were performed versus the negative control for survival and growth.

## **APPENDIX: A**

**Summary of Statistical Tests and Probabilities**  
**Dead Creek *Chironomus tentans* Acute Toxicity Test**  
**BTR: 3615**

<u>Day 10</u>	<u>Survival</u>					<u>Growth</u>				
	Proportion Surviving	F-Test Equal Variance <sup>1</sup>	T-Test Statistical Probability	Statistically Significant	Average Weight (mg)	F-Test Equal Variance <sup>1</sup>	T-Test Statistical Probability	Statistically Significant		
12552 Control	0.98				2.558					
12546 Sample	0.30	0.042	0.000	*	2.905	0.000	0.316			
12547 Sample	0.00	NA <sup>2</sup>	0.000	*	0.000	NA <sup>2</sup>	NA <sup>2</sup>	*		
12548 Sample	0.96	0.757	0.318		2.352	0.051	0.179			
12549 Sample	0.44	0.025	0.000	*	3.021	0.000	0.213			
12550 Sample	0.48	0.012	0.000	*	2.879	0.392	0.026			
12551 Sample	0.71	0.125	0.000	*	3.412	0.033	0.004			

\* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

1. If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal variances.

2. There were not enough sample and/or control response variabilility to conduct a meaningful F-Test

**Chironomus tentans**  
Acute Toxicity Test Results

**Menzie-Cura**  
Dead Creek  
99033

BTR 3615  
Aquatec Biological Sciences

		Day 10 Data								
Sample Number	Replicate	Start Count	# Surviving	Mean Proportion Surviving	Initial Boat Proportion Surviving	Total Dry Weight (mg)	# Organisms Weighed	Mean Wt. (mg) within Rep	Mean Wt. Reps I-L (mg)	
12552	A	10	10	1.00		38.40	60.60	10	2.220	
	B	10	10	1.00		32.07	61.15	10	2.908	
	C	10	8	0.80		28.90	49.39	8	2.561	
	D	10	10	1.00		37.56	61.28	10	2.372	
	E	10	10	1.00		29.48	53.70	10	2.422	
	F	10	10	1.00		29.16	54.08	10	2.492	
	G	10	10	1.00		35.09	58.20	9	2.568	
	H	10	10	1.00	0.98	37.77	67.00	10	2.923 2.558	
12546	A	10	4	0.40		36.85	53.60	4	4.188	
	B	10	2	0.20		40.08	47.98	2	3.950	
	C	12	2	0.17		35.91	46.39	2	5.240	
	D	10	0	0.00				0	0.000	
	E	10	6	0.60		31.81	51.42	6	3.268	
	F	10	5	0.50		36.63	49.64	5	2.602	
	G	10	1	0.10				0	0.000	
	H	10	4	0.40	0.30	30.27	42.24	3	3.990 2.905	
12547	A	10	0	0.00				0	0.000	
	B	10	-					-		
	C	10	0	0.00				0	0.000	
	D	10	0	0.00				0	0.000	
	E	10	0	0.00				0	0.000	
	F	10	-					-		
	G	10	0	0.00				0	0.000	
	H	10	0	0.00	0.00			0	0.000 0.000	
12548	A	10	10	1.00		30.00	56.51	10	2.651	
	B	10	10	1.00		27.30	49.64	10	2.234	
	C	10	10	1.00		29.43	58.90	10	2.947	
	D	10	-					-		
	E	10	8	0.80		28.53	45.64	8	2.139	
	F	10	9	0.90		28.93	51.70	9	2.530	
	G	10	10	1.00		29.98	42.54	10	1.256	
	H	10	10	1.00	0.96	32.29	59.33	10	2.704 2.352	
12549	A	10	5	0.50		32.45	49.59	4	4.285	
	B	10	5	0.50		33.73	55.07	5	4.268	
	C	10	0	0.00				0	0.000	
	D	10	8	0.80		32.59	57.67	8	3.135	
	E	10	4	0.40		37.68	52.76	4	3.770	
	F	10	4	0.40		34.21	47.00	3	4.263	
	G	10	3	0.30		32.60	41.17	3	2.857	
	H	10	6	0.60	0.44	33.91	43.43	6	1.567 3.021	
12550	A	10	1	0.10		32.87	35.62	1	2.750	
	B	10	2	0.20		31.55	36.98	2	2.715	
	C	10	9	0.90		29.56	54.14	9	2.731	
	D	10	4	0.40		39.14	48.55	4	2.353	
	F	10	4	0.40		33.26	43.44	3	3.393	
	G	10	6	0.60		27.47	44.63	6	2.860	
	H	10	8	0.80	0.48	25.50	52.40	8	3.363 2.879	
12551	A	10	7	0.70		32.27	52.89	7	2.946	
	B	10	4	0.40		34.14	50.83	4	4.173	
	C	10	6	0.60		34.26	59.68	6	4.237	
	D	10	9	0.90		34.46	62.72	9	3.140	
	E	10	-					-		
	F	10	8	0.80		32.67	58.07	8	3.175	
	G	10	7	0.70		33.13	54.47	6	3.557	
	H	10	9	0.90	0.71	38.67	62.57	9	2.656 3.412	

\* A indigenous predator was found in the sample during breakdown on day 10. See protocol deviations.

000002

**Summary of Statistical Tests and Probabilities**  
**Dead Creek *Chironomus tentans* Acute Toxicity Test**  
**BTR: 3622/3629**

<b>Day 10</b>		<b>Survival</b>				<b>Growth</b>			
		<b>Proportion</b>	<b>F-Test</b>	<b>T-Test</b>		<b>Average</b>	<b>F-Test</b>	<b>T-Test</b>	
				<b>Equal</b>	<b>Statistical</b>			<b>Equal</b>	<b>Statistical</b>
		<b>Surviving</b>	<b>Variance</b>	<b>Probability</b>	<b>Significant</b>		<b>Weight (mg)</b>	<b>Variance<sup>1</sup></b>	<b>Probability</b>
12615	Control	1.00				1.922			
12589	Sample	0.00	NA <sup>2</sup>	0.000	*	0.000	NA <sup>2</sup>	0.000	*
12590	Sample	0.04	NA <sup>2</sup>	0.000	*	0.529	0.006	0.003	*
12591	Sample	0.00	NA <sup>2</sup>	0.000	*	0.000	NA <sup>2</sup>	0.000	*
12593	Sample	0.96	NA <sup>2</sup>	0.030	*	1.964	0.447	0.384	
12609	Sample	0.91	NA <sup>2</sup>	0.004	*	1.079	0.373	0.000	*
12610	Sample	0.16	NA <sup>2</sup>	0.000	*	1.501	0.000	0.293	

\* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

1. If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal variances.

2. There were not enough sample and/or control response variabilility to conduct a meaningful F-Test.

Sample 12592 was not included in the statistical analysis. See protocol deviations.

*Chironomus tentans*  
Acute Toxicity Test Results

Menzie-Cura  
Dead Creek  
99033

BTR 3622/3629  
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	Day 10 Data							
			# Surviving	Mean Proportion Surviving	Initial Boat Weight (mg)	Total Dry Weight (mg)	# Organisms Weighed	Mean Wt. (mg) within Rep	Mean Wt. (mg) Reps I-L	
12615	A	10	10	1.00	28.81	48.78	10	1.997		
	B	10	10	1.00	31.95	53.69	10	2.174		
	C	10	10	1.00	33.29	51.53	10	1.824		
	D	10	10	1.00	27.77	41.70	10	1.393		
	E	10	10	1.00	27.97	52.01	10	2.404		
	F	10	10	1.00	34.55	53.20	10	1.865		
	G	11	11	1.00	27.97	45.71	11	1.613		
	H	10	10	1.00	29.90	50.95	10	2.105	1.922	
12589	A	10	0	0.00			0	0.000		
	B	10	0	0.00			0	0.000		
	C	12	0	0.00			0	0.000		
	D	10	0	0.00			0	0.000		
	E	10	0	0.00			0	0.000		
	F	10	0	0.00			0	0.000		
	G	10	0	0.00			0	0.000		
	H	10	0	0.00	0.00		0	0.000	0.000	
12590	A	10	1	0.10	38.84	40.32	1	1.480		
	B	10	0	0.00			0	0.000		
	C	10	0	0.00			0	0.000		
	D	10	0	0.00			0	0.000		
	E	10	0	0.00			0	0.000		
	F	10	0	0.00			0	0.000		
	G	10	0	0.00			0	0.000		
	H	10	2	0.20	0.04	29.69	35.20	2	2.755	0.529
12591	A	10	0	0.00			0	0.000		
	B	10	0	0.00			0	0.000		
	C	10	0	0.00			0	0.000		
	D	10	0	0.00			0	0.000		
	E	10	0	0.00			0	0.000		
	F	10	0	0.00			0	0.000		
	G	10	0	0.00			0	0.000		
	H	10	0	0.00	0.00		0	0.000	0.000	
12592	A	10	13	1.30	36.37	48.11	13	0.903		
	B	10	26	2.80	30.32	45.92	26	0.557		
	C	10	18	1.80	32.71	37.38	18	0.259		
	D	10	11	1.10	39.20	48.63	11	0.857		
	E	10	18	1.80	42.72	45.55	16	0.157		
	F	10	15	1.50	34.39	52.14	15	1.183		
	G	10	11	1.10	38.29	41.62	11	0.303		
	H	10	8	0.80	1.53	35.96	39.40	8	0.430	0.581
12593	A	10	9	0.90	33.78	51.62	9	1.982		
	B	10	9	0.90	43.18	60.67	9	1.943		
	C	11	11	1.00	36.03	57.56	11	1.959		
	D	10	10	1.00	35.15	50.58	10	1.543		
	E	10	10	1.00	40.43	60.22	10	1.979		
	F	10	9	0.90	35.86	50.59	8	1.841		
	G	10	10	1.00	35.16	56.80	9	2.404		
	H	10	10	1.00	0.9625	36.52	57.14	10	2.062	1.964
12609	A	10	8	0.80	31.55	39.77	8	1.026		
	B	10	10	1.00	31.99	42.69	10	1.070		
	C	10	10	1.00	32.11	41.76	10	0.965		
	D	10	8	0.80	32.66	39.06	8	0.800		
	E	10	10	1.00	36.79	53.66	10	1.487		
	F	10	9	0.90	31.67	39.99	8	1.040		
	G	10	9	0.90	27.36	35.53	9	0.906		
	H	10	9	0.90	0.91	26.07	38.09	9	1.336	1.079
12610	A	10	2	0.20	32.27	41.92	2	4.825		
	B	10	0	0.00			0	0.000		
	C	10	0	0.00			0	0.000		
	D	10	1	0.10	34.50	39.01	1	4.510		
	E	10	0	0.00			0	0.000		
	F	10	1	0.10	34.19	34.92	1	0.730		
	G	10	0	0.00			0	0.000		
	H	10	9	0.90	0.16	32.34	49.85	9	1.946	1.501

000004

**Summary of Statistical Tests and Probabilities**  
**Dead Creek *Chironomus tentans* Acute Toxicity Test**  
**BTR: 3629/3633**

<u>Day 10</u>	<u>Survival</u>					<u>Growth</u>				
	Proportion Surviving	F-Test Equal Variance <sup>1</sup>	T-Test Statistical Probability	Statistically Significant	Average Weight (mg)	F-Test Equal Variance <sup>1</sup>	T-Test Statistical Probability	Statistically Significant		
12622	Control	0.94			1.761					
12611	Sample	0.97	0.379	0.160	2.240	0.826	0.031			
12612	Sample	0.64	0.004	0.018	*	2.643	0.027	0.040		
12613	Sample	0.40	0.012	0.000	*	4.071	0.014	0.001		
12614	Sample	0.53	0.002	0.009	*	2.996	0.016	0.016		
12638	Sample	0.14	0.001	0.001	*	0.956	0.002	0.137		
12639	Sample	0.31	0.005	0.000	*	2.686	0.019	0.042		
12640	Sample	0.16	0.002	0.001	*	0.053	NA <sup>2</sup>	0.000	*	
12641	Sample	0.10	0.058	0.000	*	0.969	0.007	0.095		

\* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

1. If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal variances.

2. There were not enough sample and/or control response variability to conduct a meaningful F-Test.

*Chironomus tentans*  
Acute Toxicity Test Results

Menzie-Cura  
Dead Creek  
99033

BTR 3629/3633  
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	Day 10 Data							
			# Surviving	Proportion Surviving	Mean Proportion Surviving	Initial Boat Weight (mg)	Total Dry Weight (mg)	# Organisms Weighed	Mean Wt. (mg)	Mean Wt. Reps I-L (mg)
12622	A	10	10	1.00		53.37	73.08	10	1.971	
	B	10	10	1.00		59.34	68.47	10	0.913	
	C	10	9	0.90		51.16	64.49	9	1.481	
	D	10	10	1.00		56.01	76.25	10	2.024	
	E	10	8	0.80		58.63	71.84	5	1.651	
	F	10	9	0.90		56.14	78.78	9	2.516	
	G	10	9	0.90		55.67	73.42	9	1.950	
	H	10	10	1.00	0.94	47.21	63.02	10	1.581	1.761
12611	A	10	10	1.00		38.81	60.20	10	2.139	
	B	10	9	0.90		48.33	63.29	9	1.662	
	C	10	10	1.00		39.77	63.67	10	2.390	
	D	10	9	0.90		35.30	57.97	9	2.519	
	E	10	10	1.00		47.71	65.44	10	1.773	
	F	10	10	1.00		40.74	63.70	10	2.296	
	G	10	*					*		
	H	10	10	1.00	0.97	34.78	63.76	10	2.896	2.240
12612	A	10	5	0.50		44.27	60.54	5	3.254	
	B	10	10	1.00		48.19	67.85	10	1.966	
	C	10	8	0.80		41.67	66.59	8	3.090	
	D	10	6	0.60		47.59	69.61	6	3.670	
	E	10	0	0.00				0	0.000	
	F	10	7	0.70		51.61	72.60	7	2.999	
	G	10	10	1.00		47.92	75.93	10	2.801	
	H	10	5	0.50	0.64	47.38	64.22	5	3.368	2.643
12613	A	10	1	0.10		46.77	53.48	1	6.710	
	B	10	9	0.90		45.64	66.77	9	2.348	
	C	10	7	0.70		44.80	71.69	7	3.641	
	D	10	2	0.20		42.20	47.83	2	2.815	
	E	10	3	0.30		51.92	63.36	3	3.813	
	F	10	6	0.60		50.58	77.40	6	4.470	
	G	10	1	0.10		50.02	53.86	1	3.840	
	H	10	3	0.30	0.40	50.43	64.61	3	4.727	4.071
12614	A	10	10	1.00		44.77	71.48	10	2.671	
	B	10	10	1.00		59.26	92.75	10	3.349	
	C	10	6	0.60		57.85	81.44	6	3.932	
	D	10	0	0.00				0	0.000	
	E	10	1	0.10		46.29	49.18	1	2.890	
	F	10	3	0.30		53.44	64.53	3	3.697	
	G	10	6	0.60		51.31	71.82	6	3.416	
	H	10	6	0.60	0.53	55.17	79.23	6	4.010	2.996
12638	A	10	0	0.00				0	0.000	
	B	10	0	0.00				0	0.000	
	C	10	0	0.00				0	0.000	
	D	10	0	0.00				0	0.000	
	E	10	0	0.00				0	0.000	
	F	10	0	0.00				0	0.000	
	G	11	11	1.00		54.43	83.74	11	2.665	
	H	10	1	0.10	0.14	51.79	56.77	1	4.980	0.956
12639	A	11	11	1.00		43.47	65.09	11	1.966	
	B	10	2	0.20		52.86	60.89	2	4.005	
	C	10	0	0.00				0	0.000	
	D	10	3	0.30		60.46	69.50	3	3.013	
	E	10	1	0.10		53.50	56.38	1	2.680	
	F	10	4	0.40		42.20	54.77	4	3.143	
	G	10	1	0.10		52.25	56.05	1	3.790	
	H	10	4	0.40	0.31	53.72	64.49	4	2.693	2.686
12640	A	10	0	0.00				0	0.000	
	B	10	0	0.00				0	0.000	
	C	10	0	0.00				0	0.000	
	D	10	10	1.00				0	0.000	
	E	10	0	0.00				0	0.000	
	F	10	*					*		
	G	10	1	0.10		29.55	29.90	1	0.370	
	H	10	0	0.00	0.16			0	0.000	0.053
12641	A	10	0	0.00				0	0.000	
	B	10	6	0.60		36.19	48.88	6	2.115	
	C	10	1	0.10		50.62	54.64	1	4.020	
	D	10	0	0.00				0	0.000	
	E	10	1	0.10		41.97	43.59	1	1.620	
	F	10	0	0.00				0	0.000	
	G	10	0	0.00				0	0.000	
	H	10	0	0.00	0.10			0	0.000	0.969

\* A indigenous predator was found in the sample during breakdown on day 10. See protocol deviations

000006

**Summary of Statistical Tests and Probabilities**  
**Dead Creek *Chironomus tentans* Acute Toxicity Test**  
**BTR: 3641**

<u>Day 10</u>		<u>Survival</u>					<u>Growth</u>				
		Proportion Surviving	F-Test Equal Variance	T-Test		Statistically Significant	Average Weight (mg)	F-Test Equal Variance <sup>1</sup>	T-Test		Statistically Significant
				Statistical Probability	Significant				Probability	Significant	
12668	Control	1.00					2.065				
12664	Sample	0.16	NA <sup>2</sup>	0.000	*	*	1.052	0.005	0.047	*	
12665	Sample	0.55	NA <sup>2</sup>	0.000	*	*	2.699	0.173	0.024		
12666	Sample	0.13	NA <sup>2</sup>	0.000	*	*	0.346	0.306	0.000	*	
12671	Sample	0.11	NA <sup>2</sup>	0.000	*	*	1.409	0.004	0.136		

\* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

1. If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal va

2. There were not enough sample and/or control response variability to conduct a meaningful F-Test.

*Chironomus tentans*  
Acute Toxicity Test Results

Menzie-Cura  
Dead Creek  
99033

BTR 3641  
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	# Surviving	Day 10 Data						
				Mean Proportion	Initial Boat Proportion	Total Dry Weight (mg)	# Organism Weighed	Mean Wt. within Rep (mg)	Mean Wt. Reps I-L (mg)	
12668	A	10	10	1.00			0			
	B	10	10	1.00			0			
	C	10	10	1.00	36.90	57.53	10	2.063		
	D	10	10	1.00	38.94	64.79	10	2.585		
	E	10	10	1.00	40.44	57.73	10	1.729		
	F	10	10	1.00	36.10	56.71	10	2.061		
	G	10	10	1.00	43.85	60.76	10	1.691		
	H	10	10	1.00	36.95	59.57	10	2.262	2.065	
12664	A	10	0	0.00			0	0.000		
	B	10	7	0.70	35.61	53.98	7	2.624		
	C	12	6	0.50	40.00	56.46	6	2.743		
	D	10	0	0.00			0	0.000		
	E	10	1	0.10	40.14	43.19	1	3.050		
	F	10	0	0.00			0	0.000		
	G	10	0	0.00			0	0.000		
	H	10	0	0.00	0.16		0	0.00	1.052	
12665	A	10	9	0.90		37.51	56.22	9	2.079	
	B	10	8	0.80	37.80	59.66	8	2.733		
	C	10	8	0.80	32.59	54.27	8	2.710		
	D	10	4	0.40	35.21	51.61	4	4.100		
	E	10	8	0.80	35.84	52.66	8	2.103		
	F	10	4	0.40	42.47	54.17	4	2.925		
	G	10	2	0.20	37.61	42.38	2	2.385		
	H	10	1	0.10	0.55	36.05	38.61	1	2.560	2.699
12666	A	10	1	0.10		36.63	37.52	1	0.890	
	B	10	4	0.40	41.08	46.96	4	1.470		
	C	10	1	0.10	37.66	37.81	1	0.150		
	D	10	3	0.30	40.29	40.50	1	0.210		
	E	10	1	0.10	39.29	39.34	1	0.050		
	F	10	0	0.00			0	0.000		
	G	10	0	0.00			0	0.000		
	H	10	0	0.00	0.13		0	0.000	0.346	
12671	A	10	0	0.00			0	0.000		
	B	10	0	0.00			0	0.000		
	C	10	4	0.40	46.24	55.53	4	2.323		
	D	10	0	0.00			0	0.000		
	E	10	1	0.10	44.61	47.60	1	2.990		
	F	10	3	0.30	46.30	55.50	3	3.067		
	G	10	1	0.10	40.12	43.01	1	2.890		
	H	10	0	0.00	0.11		0	0.000	1.409	

000008

***Chironomus tentans* Chronic Survival, Growth, Emergence  
and Reproduction Toxicity Tests  
Conducted on Sediment Samples  
from the Solutia Site, Sauget , Illinois**

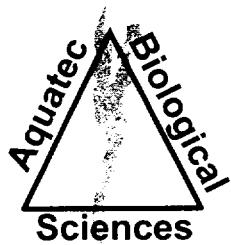
Reference BTRs 3615, 3622, 3629, 3633, 3641, 3643

Prepared for:  
**Menzie-Cura & Associates**  
**1 Courthouse Lane, Suite 2**  
**Chelmsford, MA 01824**



Prepared by:  
**Aquatec Biological Sciences**  
**75 Green Mountain Drive**  
**South Burlington, Vermont**

December 1999



# Aquatec Biological Sciences



Ecology



Environmental  
Toxicology



Natural Resource  
Assessments

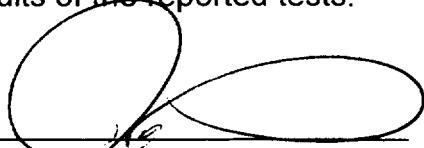


Microbiology

BTRs 3615, 3622, 3629, 3633, 3641, 3643

PROJECT: 99033

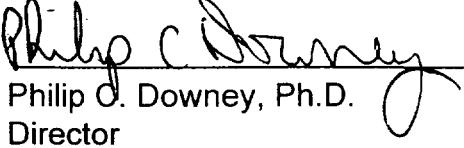
I have reviewed this data package, which was completed under my supervision. This data package is complete, and to the best of my ability, accurately reflects the conditions and the results of the reported tests.

  
John W. Williams  
Toxicity Laboratory Manager

12/22/99

Date

I have reviewed and discussed this data package with the responsible laboratory manager. Based on this review, the data package was, to the best of my knowledge and belief, conducted in accordance with established company quality assurance procedures.

  
Philip O. Downey, Ph.D.  
Director

12/23/99

Date

## **TABLE OF CONTENTS**

EXECUTIVE SUMMARY .....	1
INTRODUCTION .....	2
METHODS .....	2
PROTOCOL DEVIATIONS .....	4
RESULTS .....	4
QUALITY ASSURANCE .....	5

## **LIST OF APPENDICES**

APPENDIX A: RESULTS OF WHOLE SEDIMENT TOXICITY TESTS

APPENDIX B: CHAIN-OF-CUSTODY DOCUMENTATION

APPENDIX C: LABORATORY DOCUMENTATION AND DATA ANALYSES FOR  
*Chironomus tentans* TOXICITY TESTS

APPENDIX D: RESULTS OF STANDARD REFERENCE TOXICANT TESTS

## EXECUTIVE SUMMARY

**100.5CT Midge, *Chironomus tentans* Chronic Survival, Growth,  
 Emergence, and Reproduction**  
**Conducted October 19 - December 14, 1999**  
**for Menzie-Cura & Associates**  
**Solutia Site, Sauget, Illinois**

Laboratory Sample ID	Client Sample ID	Day 20 Mean Survival (%)	Day 20 Mean Ash Weight (mg)	Emergence Proportion (%)	Mean Eggs Hatched/ Female	Mean Days Survived, Female	Mean Days Survived, Male
12546	BTOX-C-1		Acute Toxicity	--	--	--	--
12547	BTOX-C-2		Acute Toxicity	--	--	--	--
12548	BTOX-C-3	63	3.186	56	526	2.4	3.7
12549	BTOX-D-1		Acute Toxicity	--	--	--	--
12550	BTOX-D-2	31	0.937*	2*	0*	0.8*	0*
12551	BTOX-D-3	42*	--	10*	298	0.6*	1.1*
12552	Laboratory Control	81	2.679	50	130	2.8	4.5
12589	BTOX-B-1		Acute Toxicity	--	--	--	--
12590	BTOX-B-1 (DUPE)		Acute Toxicity	--	--	--	--
12591	BTOX-B-2		Acute Toxicity	--	--	--	--
12592	BTOX-B-3	52	2.244	52	302	2.5	3.1
12593	BTOX-M	40	2.216	54	430	3.6	4.1
12609	E-1 Dead Creek	54	2.501	42	576	3.5	2.4
12610	E-2 Dead Creek		Acute Toxicity	--	--	--	--
12611	E-3 Dead Creek	0*	--	1*	0*	0.6*	0*
12612	BP-1 Borrow Pit	0*	--	5*	0*	0*	0.7*
12613	BP-1 Borrow Pit (DUPE)	0*	--	8*	127*	0.3*	0.8*
12614	BP-3 Borrow Pit	6*	--	14*	106*	0.8*	1.2*
12622	Laboratory Control	46	2.959	45	554	3.1	4.9
12638	BP-2 Borrow Pit		Acute Toxicity	--	--	--	--
12639	F-1 Dead Creek Section F		Acute Toxicity	--	--	--	--
12640	F-2 Dead Creek Section F		Acute Toxicity	--	--	--	--
12641	F-3 Dead Creek Section F		Acute Toxicity	--	--	--	--
12664	Prairie DuPont Creek		Acute Toxicity	--	--	--	--
12665	Prairie DuPont Creek 2	69	3.074	13*	249	1.1*	1.4*
12666	Reference Creek		Acute Toxicity	--	--	--	--
12668	Laboratory Control	65	2.923	69	354	3.6	4.3
12671	Ref 2-2 Ref. Borrow Pit		Acute Toxicity	--	--	--	--

The response data were statistically significantly different from the corresponding laboratory control sediment ( $p \leq 0.05$ ).

-- When a statistically significant reduction in survival was detected, mean ash-free dry weight data were only reported in Appendix A.

## INTRODUCTION:

Samples were received for toxicity testing at Aquatec Biological Sciences of 75 Green Mountain Drive, South Burlington, Vermont. The results of the following tests are reported:

Client:	Menzie-Cura & Associates
Facility/Location:	Dead Creek / Sauget, Illinois
Initial Sampling Date:	October 4 - October 9, 1999
Testing Dates:	October 19 - December 14, 1999
Tests Conducted:	Midge, <i>Chironomus tentans</i> , Chronic Survival, Growth, Emergence, and Reproduction

## METHODS:

### Toxicity Tests

The procedures followed in conducting these toxicity tests were based on draft methods described by the USEPA (EPA 600/R-98/XXX [new number pending]). Test conditions for *Chironomus tentans* are listed in Table 1. Testing was completed in three separate groupings based upon chronological sequencing from the time of sediment collection. The objective for the test groupings was to complete the 10-day acute tests prior to expiration of a project-specific 14-day sediment storage time so that subsequent chronic toxicity tests could be started within a 14-day time frame. The acute toxicity results were reported separately (Aquatec Biological Sciences, December 1999).

Sediments were loaded into beakers for chronic testing within one day after completion of the acute toxicity tests, therefore, the objective of starting all tests within 14-days from the time of collection was accomplished for all samples. Chronic toxicity testing for the first testing group was initiated on October 19, 1999. The second testing group was initiated on October 20, 1999. The third testing group was initiated on October 21, 1999. A laboratory control (artificial sediment) was included with each testing group. Midge larvae less than four hours old were obtained from Aquatec Biological Sciences in-house cultures. Chronic toxicity tests were ended (on an individual sample basis) following seven days with no observed emergence. Overlying water was renewed either automatically or manually. For those samples/replicates renewed automatically, the renewal cycle was programmed for midnight and noon of each day. For

samples/replicates renewed manually, the renewal cycle was performed at approximately 7:00 a.m. and 7:00 p.m. daily. Documentation of renewals and renewal system checks is located in Appendix C.

### **Sediment Preparation**

The samples were stored refrigerated and in the dark whenever they were not being used in preparation for testing. Sediments distributed in test beakers were examined for the presence of indigenous organisms which were removed when observed. Also, large pieces of vegetative material (e.g., leaf litter, sticks, grass) were removed if observed. Qualitative observations regarding the sediment type and indigenous organisms removed were recorded. The laboratory control sediment (artificial sediment) was prepared following formulations specified in the USEPA protocols and then hydrated prior to distribution to test chambers. Sediments were then distributed to individual replicate test chambers, overlying water was added, and the overlying water renewal system was activated. The unused portion of each sample (in the original sample container) was returned to refrigerated storage.

During acute toxicity testing indigenous chironomid larvae found in Sample 12592 (BTOX-B-3) confounded the acute toxicity assessment. Prior to loading this sediment into beakers for the chronic toxicity test the sediment was sieved through a 0.3 micron Nitex mesh screen to remove indigenous chironomids.

### **Statistical Analyses**

Statistical endpoints included survival and growth (as measured by mean ash-free dry weight) of midge larvae, evaluated on Day 20. At the end of the test, proportion emergence, reproduction (mean number of eggs per female), and mean number of days male and female flies survived (after emergence) were evaluated.

Statistical comparisons were performed against the concurrent laboratory control. In some cases, where the mean laboratory control response was numerically less than or equal to the test sediment the test samples were judged to be non-significant. If complete mortality was observed in any sample, the response was considered to be significant. Statistical significance for any sample was based upon the most sensitive endpoint observed.

An F-Test was performed to test for equality of variances between each sample and the corresponding control for each endpoint examined. Proportion surviving data were transformed (Arcsin square-root) before analysis. If variances were not significantly different, paired T-Tests with equal variances were used to determine whether there was a significant reduction in the mean response relative to the corresponding control. If the variance between a sample and control comparison was significantly different, paired T-Tests adjusted for unequal variances were used to identify significant reductions in the response.

#### **PROTOCOL DEVIATIONS:**

At the Day 20 assessments of survival and growth, some pupating larvae and post-emergent body casts were found in some test replicates. Day 20 survival totals were established by combining larvae, pupae, and the number of body casts present. Day 20 growth assessments (ash-free dry weight) were based upon surviving larvae only.

Replicate J of Sample 12551 (one larva surviving) had an apparent weighing and was excluded from the data analysis.

On occasion, the number of days that emerged flies survived was not recorded due either to escapes from emergence traps or oviposition chambers, accidental injury, or a laboratory error in recording the number of days until mortality for individual flies. A list of the affected test replicates is located at the end of Appendix C. For those flies where time-to-mortality was not recorded, they were included in the emergence tabulations but were excluded from the days survived tabulations.

#### **RESULTS:**

Summary result tabulations for the *Chironomus tentans* whole sediment toxicity tests are located in Appendix A.

**Group 1 Test Results:** This group included Samples 12548 (BTOX-C-3), 12550 (BTOX-D-2),

12551 (BTOX-D-3), 12592 (BTOX-B-3), 12593 (BTOX-M), and 12609 (E-1 Dead Creek). Sample 12550 (BTOX-D-2) had a significant reduction in Day 20 growth and also significant reductions in proportion emerged and mean number of days male and female flies survived. Sample 12551 (BTOX-D-3) had significant reductions in Day 20 survival and also significant reductions in proportion emerged and mean number of days male and female flies survived.

Group 2 Test Results: This group included samples 12611 (E-3 Dead Creek), 12612, (BP-1 Borrow Pit), 12613 (BP-1 Borrow Pit duplicate), and 12614 (BP-3 Borrow Pit). Samples 12611 (E-3 Dead Creek), 12612, (BP-1 Borrow Pit), 12613 (BP-1 Borrow Pit duplicate), and 12614 (BP-3 Borrow Pit) had significant reductions for all response parameters evaluated.

Group 3 Test Results: This group included sample 12665 (Prairie Du Pont Creek 2). Sample 12665 had significant reductions in proportion emerged and mean number of days males and females survived.

Total Ammonia and Sulfide: Total ammonia concentrations were less than 25mg/L in porewater and less than 5 mg/L in overlying water. Total sulfide was not detected (<0.5mg/L) in any porewater samples during the initial acute toxicity testing, therefore, testing for sulfide in overlying water was not conducted.

#### QUALITY ASSURANCE:

A standard reference toxicant SRT tests were conducted with representative batches of *Chironomus tentans*. The resulting LC50 values fell within control chart limits and were viewed as being acceptable.

**Table 1. Test Conditions for the Midge (*Chironomus tentans*) Chronic Whole Sediment Survival, Growth, Emergence and Reproduction Toxicity Test.**

---

ASSOCIATED PROTOCOL: EPA, 1997. Draft Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates, Second Edition Method 100.5 (EPA/600/R-98/XXX).

1. Test type:	Whole-sediment toxicity (static renewal)
2. Test temperature:	23 ± 1°C
3. Light quality:	Wide-spectrum fluorescent lights
4. Light illumination:	500 to 1000 lux
5. Photoperiod:	16 hr. light, 8 hr. dark
6. Test chamber size:	300 mL beaker
7. Sediment volume:	100 mL (distributed to test chambers on the day prior to administration of test organisms)
8. Overlying water volume:	175 mL
9. Renewal of overlying water	Twice daily
10. Age of test organisms:	Larvae less than 24-h old
11. Number of organisms / test chamber:	12 (acclimated to test conditions)
12. Number of replicate test chambers / treatment:	16 (4 for 20-day survival and growth and 8 for emergence, reproduction, and fly survival). An additional 4 replicates on Day 20 started as a source of auxiliary males.
13. Feeding regime:	1.0 mL Tetrafin slurry (1.0 mg/mL daily)
14. Aeration:	None, unless dissolved oxygen in overlying water drops below 2.5 mg/L. Supplemental water renewals may be implemented to raise dissolved oxygen concentrations.

---

**Table 1. Test Conditions for the Midge (*Chironomus tentans*) Chronic Whole Sediment Survival, Growth, Emergence and Reproduction Toxicity Test (continued).**

15. Overlying water:	Reconstituted water
16. Control sediment:	Formulated sediment (EPA/600/R-94/024, section 7.2.3.2)
17. Test chamber cleaning:	Overflow screens, as needed
18. Monitoring:	
Overlying water	
Temperature	Daily, one replicate
Dissolved oxygen	At least three days weekly
pH	At least three days weekly
Conductivity	At least Days 0, 20, and end of test
Alkalinity, hardness, ammonia	At least Days 0, 20, and end of test
Organism behavior	Daily, all replicates
19. Test duration:	On an individual sample basis, when no additional emergence has been recorded for seven consecutive days.
20. End points:	Day 20 survival and growth (ash-free dry weight, larvae dried 60°C-90°C overnight, then ashed at 550°C for 2 h). Reproduction (average hatched eggs produced per female) and number of days emergent flies survived (male and female).
21. Reference toxicant:	96-h acute, water only (KCl)
22. Test acceptability:	Reference or Laboratory Control survival should be 70% or greater on Day 20 with adherence to performance-based criteria outlined in EPA/600/R-98/XXX, Table 15.3
23. Statistical analysis and data interpretation:	Paired-sample hypothesis testing (e.g. t-test) versus the negative control and/or the appropriate reference site. Proportion data transformed (Arc-sine (square-root)) before analysis.

## **APPENDIX A**

**Summary of Statistical Tests and Probabilities**  
**Dead Creek *Chironomus tentans* Chronic Toxicity Test**  
**BTR: 3615/3622**

<u>Day 20</u>	<u>Survival</u>					<u>Growth</u>				
	Proportion Surviving	F-Test Equal Variance <sup>2</sup>	T-Test Statistical Probability	Statistically Significant <sup>1</sup>	Average Weight (mg)	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1</sup>		
12552	Control	0.81			2.679					
12548	Sample	0.63	0.218	0.092	3.186	0.579	0.225			
12550	Sample	0.31	0.033	0.053	0.937	0.396	0.026	*		
12551	Sample	0.42	0.072	0.031	*	1.950	0.161	0.243		
12592	Sample	0.52	0.095	0.053	2.244	0.546	0.179			
12593	Sample	0.40	0.160	0.000	*	2.216	0.946	0.195		
12609	Sample	0.54	0.079	0.088	2.501	0.869	0.376			

1. \* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

2. If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal variances.

*Chironomus tentans*  
Chronic Toxicity Test Results

Menzie-Cura  
Dead Creek  
99033

BTR 3615/3622  
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	# Surviving	Day 20 Data							
				Mean Proportion Surviving	Wt. + Larval and Ashed (mg)	Ashed Pan	Larval Wt. (mg)	# Organisms Weighed	Mean Wt. (mg)	Mean Wt. Reps I-L (mg)	
12552	I	12	10	0.83	2503.78	2487.15	5	3.326			
	J	12	11	0.92	2289.24	2269.48	11	1.796			
	K	12	9	0.75	2407.95	2388.70	6	3.208			
	L	12	9	0.75	2453.63	2432.17	9	2.384			
				0.81					2.679		
12548	I	12	11	0.92	2267.44	2243.55	11	2.172			
	J	12	7	0.58	2142.36	2123.31	7	2.721			
	K	12	7	0.58	2408.08	2388.36	6	3.287			
	L	12	5	0.42	2306.17	2287.91	4	4.565			
				0.63					3.186		
12550	I	12	0	0.00	0.00	0.00	0	0.000			
	J	12	11	0.92	2167.44	2136.97	11	2.770			
	K	12	3	0.25	2182.25	2160.82	3	0.477			
	L	12	1	0.06	2491.36	2490.86	1	0.500			
				0.31					0.937		
12551	I	12	8	0.67	2323.33	2292.54	8	3.849			
	J	12	1	0.08			*	*			
	K	12	9	0.75	2315.55	2290.15	9	2.822			
	L	12	2	0.17	2392.79	2389.75	2	1.520			
				0.42					2.048		
12592	I	12	1	0.08	2446.30	2444.62	1	1.680			
	J	12	8	0.67	2192.47	2176.60	7	2.267			
	K	12	9	0.75	2403.31	2380.29	8	2.876			
	L	12	7	0.58	2397.21	2382.15	7	2.151			
				0.52					2.244		
12593	I	12	5	0.42	2318.30	2302.13	5	3.234			
	J	12	5	0.42	2427.55	2422.12	3	1.810			
	K	12	5	0.42	2317.83	2307.51	5	2.064			
	L	12	4	0.33	2305.34	2301.83	2	1.755			
				0.40					2.216		
12609	I	12	11	0.92	2146.97	2131.58	11	1.399			
	J	12	8	0.67	2205.14	2184.15	8	2.624			
	K	12	5	0.42	2509.45	2492.65	5	3.320			
	L	12	2	0.17	2288.60	2283.28	2	2.660			
				0.54					2.501		

\* A weighing error occurred. See Protocol Deviations.

5 12/22/99

000002

**Summary of Statistical Tests and Probabilities**  
**Dead Creek *Chironomus tentans* Chronic Toxicity Test**  
**BTR: 3615/3622**

		<u>Emergence</u>				<u>Reproduction</u>			
		Proportion Emerged	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1,3</sup>	Mean Eggs Hatched/ Female	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1,3</sup>
12552	Control	0.50				130.2			
12548	Sample	0.56	0.080	0.398		526.5	0.034	0.052	
12550	Sample	0.02	0.324	0.000	*	0.0	NA <sup>2</sup>	0.079	*
12551	Sample	0.10	0.312	0.000	*	297.6	0.024	0.251	
12592	Sample	0.52	0.121	0.260		301.8	0.223	0.160	
12593	Sample	0.54	0.032	0.312		430.2	0.271	0.041	
12609	Sample	0.42	0.120	0.066		576.3	0.094	0.018	

		<u>Days Survived, Female</u>				<u>Days Survived, Male</u>			
		Mean Days Survived / Female	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1</sup>	Mean Days Survived / Male	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1</sup>
12552	Control	2.8				4.5			
12548	Sample	2.4	0.805	0.296		3.7	0.836	0.198	
12550	Sample	0.8	0.221	0.028	*	0.0	NA <sup>2</sup>	0.000	*
12551	Sample	0.6	0.661	0.003	*	1.1	0.850	0.003	*
12592	Sample	2.5	0.860	0.369		3.1	0.618	0.074	
12593	Sample	3.6	0.634	0.174		4.1	0.793	0.344	
12609	Sample	3.5	0.209	0.250		2.4	0.824	0.034	*

1. \* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

2. There were not enough sample and/or control response variability to conduct a meaningful F-Test.

3. If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal variances.

*Chironomus tentans*  
Chronic Toxicity Test Results

Menzie-Cura  
Dead Creek  
99033

BTR 3615/3622  
Aquatec Biological Sciences

Chronic Endpoints													
Sample Number	Replicate	End of Test			Emerged			Eggs			Number of Days Survived		
		Start Count	Larvae Survived	Females #	Males #	Total #	Proport.	Total #	Unhatched #	Eggs /female	Female days	Males Ave.	days Ave.
12552	A	12	0	3	5	8	0.67	0	0	0	8	4.0	24 4.8
	B	12	0	3	3	6	0.50	516	516	0	12	4.0	18 6.0
	C	12	0	0	4	4	0.33	0	0	0	0	0.0	21 5.3
	D	12	0	3	2	5	0.42	1265	12	424	5	2.5	13 6.5
	E	12	0	2	8	10	0.63	0	0	0	4	2.0	36 4.8
	F	12	0	3	3	6	0.50	1862	11	617	13	4.3	8 4.0
	G	12	0	2	5	7	0.58	902	902	0	5	2.5	23 4.6
	H	12	0	2	0	2	0.17	1508	1508	0	6	3.0	0 0.0
Average per sample							0.50			130		2.6	4.5
12548	A	12	0	4	3	7	0.56	3064	170	724	14	3.5	15 5.0
	B	12	0	1	5	6	0.50	0	0	0	4	4.0	20 4.0
	C	12	0	4	6	10	0.63	3452	1462	496	10	3.3	16 2.7
	D	12	0	2	8	10	0.63	1674	810	432	6	3.0	18 2.6
	E	12	1	4	3	7	0.58	3591	376	804	9	2.3	15 5.0
	F	12	0	2	10	12	1.00	3559	49	1755	6	3.0	45 4.5
	G	12	0	0	0	0	0.00	0	0	0	0	0.0	0 0.0
	H	12	2	0	2	2	0.17	0	0	0	0	0.0	11 5.5
Average per sample							0.56			526		2.4	3.7
12550	A	12	0	0	0	0	0.00	0	0	0	0	0.0	0 0.0
	B	12	0	0	0	0	0.00	0	0	0	0	0.0	0 0.0
	C	12	0	0	0	0	0.00	0	0	0	0	0.0	0 0.0
	D	12	0	0	0	0	0.00	0	0	0	0	0.0	0 0.0
	E	12	0	0	0	0	0.00	0	0	0	0	0.0	0 0.0
	F	12	0	0	0	0	0.00	0	0	0	0	0.0	0 0.0
	G	12	0	2	0	2	0.17	0	0	0	13	6.5	0 0.0
	H	12	0	0	0	0	0.00	0	0	0	0	0.0	0 0.0
Average per sample							0.02			0		0.6	0.0
12551	A	12	1	2	1	3	0.25	1254	12	621	6	3.0	5 5.0
	B	12	0	0	0	0	0.00	0	0	0	0	0.0	0 0.0
	C	12	0	0	0	0	0.00	0	0	0	0	0.0	0 0.0
	D	12	0	0	0	0	0.00	0	0	0	0	0.0	0 0.0
	E	12	0	0	0	0	0.00	0	0	0	0	0.0	0 0.0
	F	12	0	0	0	0	0.00	0	0	0	0	0.0	0 0.0
	G	12	0	1	6	7	0.58	2077	317	1760	2	2.0	25 4.2
	H	12	0	0	0	0	0.00	0	0	0	0	0.0	0 0.0
Average per sample							0.10			296		0.6	1.1
12592	A	12	1	4	2	5	0.50	4022	573	912	19	4.8	9 4.5
	B	12	0	3	2	5	0.42	0	0	0	3	1.0	6 3.0
	C	12	0	3	5	8	0.67	700	30	223	6	2.7	13 2.6
	D	12	0	1	3	4	0.33	0	0	0	3	3.0	6 2.0
	E	12	0	3	5	6	0.67	3080	224	955	11	3.7	21 4.2
	F	12	0	0	0	0	0.00	0	0	0	0	0.0	0 0.0
	G	12	0	4	6	10	0.63	1076	200	220	13	3.3	31 5.2
	H	12	0	4	5	9	0.75	530	115	104	6	2.0	10 3.3
Average per sample							0.52			302		2.5	3.1
12593	A	12	0	2	5	7	0.56	1822	140	641	9	4.5	17 3.4
	B	12	0	3	3	6	0.50	900	900	0	9	3.0	6 2.0
	C	12	0	5	1	6	0.50	3974	339	727	17	3.4	7 7.0
	D	12	0	4	1	5	0.42	3875	425	861	12	4.0	0 0.0
	E	12	0	1	5	6	0.50	0	0	0	0	0.0	14 4.7
	F	12	0	2	6	8	0.67	941	75	433	8	4.0	27 5.4
	G	12	0	4	4	8	0.67	3118	800	560	14	3.5	20 5.0
	H	12	0	1	5	6	0.50	0	0	0	6	6.0	25 5.0
Average per sample							0.54			430		3.6	4.1
12609	A	12	0	3	3	6	0.50	1826	1161	216	11	3.7	9 3.0
	B	12	0	3	1	4	0.33	4064	2258	582	11	3.7	0 0.0
	C	12	0	3	4	7	0.56	2089	560	510	18	6.0	17 4.3
	D	12	0	1	4	5	0.42	1102	13	1089	6	6.0	8 2.7
	E	12	0	3	6	9	0.75	3956	271	1229	13	4.3	25 5.0
	F	12	0	4	5	9	0.75	4179	240	985	15	4.0	23 4.6
	G	12	0	0	0	0	0.00	0	0	0	0	0.0	0 0.0
	H	12	0	0	0	0	0.00	0	0	0	0	0.0	0 0.0
Average per sample							0.42			576		3.5	2.4

RH3  
12/22

000004

**Summary of Statistical Tests and Probabilities**  
**Dead Creek *Chironomus tentans* Chronic Toxicity Test**  
**BTR: 3629**

<u>Day 20</u>		<u>Survival</u>				<u>Growth</u>			
		Proportion Surviving	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1</sup>	Average Weight (mg)	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1</sup>
12622	Control	0.46				2.959			
12611	Sample	0.00	NA <sup>2</sup>	0.000	*	0.000	NA <sup>2</sup>	0.000	*
12612	Sample	0.00	NA <sup>2</sup>	0.000	*	0.000	NA <sup>2</sup>	0.000	*
12613	Sample	0.00	NA <sup>2</sup>	0.000	*	0.000	NA <sup>2</sup>	0.000	*
12614	Sample	0.06	NA <sup>2</sup>	0.003	*	0.959	NA <sup>2</sup>	0.000	*

1. \* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).  
 2. There were not enough sample and/or control response variability to conduct a meaningful F-Test.

000000

*Chironomus tentans*  
Chronic Toxicity Test Results

Menzie-Cura  
Dead Creek  
99033

BTR 3629  
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	# Surviving	Day 20 Data		Mean Wt. Organisms within Rep	Mean Wt. Reps I-L (mg)
				Ashed Pan	Ashed Pan		
				Mean	Wt. + Larval and Ashed	# Weighed	
					Dry Weight (mg)	Larval Wt. (mg)	
12622	I	12	7	0.58	2139.80	2123.57	6 2.705
	J	12	4	0.33	2396.04	2387.54	3 2.833
	K	12	7	0.58	2303.40	2289.39	5 2.802
	L	12	4	0.33	2322.18	2315.19	2 3.495
				0.46			2.959
12611	I	12	0	0.00	0.00	0.00	0 0.000
	J	12	0	0.00	0.00	0.00	0 0.000
	K	12	0	0.00	0.00	0.00	0 0.000
	L	12	0	0.00	0.00	0.00	0 0.000
				0.00			0.000
12612	I	12	0	0.00	0.00	0.00	0 0.000
	J	12	0	0.00	0.00	0.00	0 0.000
	K	12	0	0.00	0.00	0.00	0 0.000
	L	12	0	0.00	0.00	0.00	0 0.000
				0.00			0.000
12613	I	12	0	0.00	0.00	0.00	0 0.000
	J	12	0	0.00	0.00	0.00	0 0.000
	K	12	0	0.00	0.00	0.00	0 0.000
	L	12	0	0.00	0.00	0.00	0 0.000
				0.00			0.000
12614	I	12	0	0.00	0.00	0.00	0 0.000
	J	12	0	0.00	0.00	0.00	0 0.000
	K	12	3	0.25	2251.81	2240.30	3 3.837
	L	12	0	0.00	0.00	0.00	0 0.000
				0.06			0.959

000006

**Summary of Statistical Tests and Probabilities**  
**Industriplex *Chironomus tentans* Chronic Toxicity Test**  
**BTR: 3629**

		<u>Emergence</u>				<u>Reproduction</u>			
	Proportion Emerged	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1,3</sup>	Mean Eggs Hatched/ Female	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1,3</sup>	
12622	Control	0.45			554.2				
12611	Sample	0.01	0.004	0.000	*	0.0	NA <sup>2</sup>	0.003	*
12612	Sample	0.05	0.365	0.000	*	0.0	NA <sup>2</sup>	0.003	*
12613	Sample	0.08	0.694	0.002	*	127.0	0.434	0.033	*
12614	Sample	0.14	0.791	0.008	*	106.0	0.063	0.017	*

		<u>Days Survived, Female</u>				<u>Days Survived, Male</u>			
	Mean Days Survived	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1,3</sup>	Mean Days Survived	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1,3</sup>	
12622	Control	3.1			4.9				
12611	Sample	0.6	0.568	0.004	*	0.0	NA <sup>2</sup>	0.000	*
12612	Sample	0.0	NA <sup>2</sup>	0.000	*	0.7	0.413	0.000	*
12613	Sample	0.3	0.308	0.000	*	0.8	0.997	0.000	*
12614	Sample	0.8	0.965	0.002	*	1.2	0.237	0.001	*

1. \* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

2. There were not enough sample and/or control response variability to conduct a meaningful F-Test.

3. If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal variances.

*Chironomus tentans*  
Chronic Toxicity Test Results

Menzie-Cura  
Dead Creek  
99033

BTR 3629  
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	Larvae Survived	Chronic Endpoints										
				End of Test				Emerged				Number of Days Survived		
				Females #	Males #	Total #	Proportion	Total #	Unhatched #	Eggs/Female	Female days	Ave.	Males days	Ave.
12622	A	12	0	4	8	12	1.00	285	28	64	16	4.0	35	5.0
	B	12	0	3	1	4	0.33	0	0	0	10	3.3	5	5.0
	C	12	0	1	3	4	0.33	1361	6	1355	4	4.0	16	5.3
	D	12	0	1	1	2	0.17	883	100	783	3	3.0	2	2.0
	E	12	0	3	2	5	0.42	2062	143	640	5	2.5	9	4.5
	F	12	0	3	6	9	0.75	2576	75	834	8	4.0	26	4.3
	G	12	1	3	3	6	0.50	2447	174	758	13	4.3	18	6.0
	H	12	0	0	1	1	0.08	0	0	0	0	0.0	7	7.0
Average per sample				0.45				554				3.1		
12611	A	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	B	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	C	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	D	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	E	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	F	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	G	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	H	12	0	1	0	1	0.08	0	0	0	5	5.0	0	0.0
Average per sample				0.01				0				0.6		
12612	A	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	B	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	C	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	D	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	E	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	F	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	G	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	H	12	0	2	3	5	0.42	5	0	0	0	0.0	17	5.7
Average per sample				0.05				0				0.0		
12613	A	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	B	12	0	0	1	1	0.08	0	0	0	0	0.0	3	3.0
	C	12	0	3	4	7	0.58	3591	543	1016	8	2.7	13	3.3
	D	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	E	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	F	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	G	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	H	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
Average per sample				0.06				127				0.3		
12614	A	12	0	3	6	9	0.75	612	3	203	5	3.0	22	3.7
	B	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	C	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	D	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	E	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	F	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	G	12	0	3	1	4	0.33	2336	400	645	6	3.0	5	5.0
	H	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
Average per sample				0.14				105				0.6		

RH3  
12/22

000000

**Summary of Statistical Tests and Probabilities**  
**Dead Creek *Chironomus tentans* Chronic Toxicity Test**  
**BTR: 3641**

Day 20	<b>Survival</b>					<b>Growth</b>				
	Proportion Surviving	F-Test Equal	T-Test Statistical Probability	Statistically Significant <sup>1</sup>		Average Weight (mg)	F-Test Equal	T-Test Statistical Probability	Statistically Significant <sup>1</sup>	
		Variance	Probability				Average	Variance		
12668	Control	0.65				2.923				
12665	Sample	0.69	0.689	0.404		3.074	0.899	0.400		

1. \* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

633000

*Chironomus tentans*  
Chronic Toxicity Test Results

Menzie-Cura  
Dead Creek  
99033

BTR 3641  
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	# Surviving	Day 20 Data		Mean Wt. + Larval and Ashed Dry Weight (mg)	Ashed Pan Wt. (mg)	Ashed Pan Larval Wt. (mg)	# Organisms Weighed	Mean Wt. (mg)	Mean Wt. (mg)
				Proportion Surviving	Proportion Surviving						
12668	I	12	7	0.58		2271.36	2263.76	3	2.533		
	J	12	10	0.83		2398.12	2386.84	4	2.820		
	K	12	10	0.83		2448.78	2430.38	8	2.300		
	L	12	4	0.33		2453.15	2445.07	2	4.040		
				0.65						2.923	
12665	I	12	11	0.92		2346.80	2326.20	11	1.873		
	J	12	3	0.25		2290.05	2282.89	2	3.580		
	K	12	9	0.75		2420.25	2395.18	8	3.134		
	L	12	10	0.83		2488.41	2484.70	1	3.710		
				0.69						3.074	

000010

**Summary of Statistical Tests and Probabilities**  
**Industriplex *Chironomus tentans* Chronic Toxicity Test**  
**BTR: 3641**

		<u>Emergence</u>				<u>Reproduction</u>			
		Proportion Emerged	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1</sup>	Mean Eggs Hatched/ Female	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1</sup>
12668	Control	0.69				354.2			
12665	Sample	0.13	0.454	0.000	*	248.8	0.710	0.317	

		<u>Days Survived, Female</u>				<u>Days Survived, Male</u>			
		Mean Days Survived	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1,2</sup>	Mean Days Survived	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant <sup>1,2</sup>
12668	Control	3.6				4.3			
12665	Sample	1.1	0.049	0.003	*	1.4	0.007	0.007	*

1. \* A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

2. If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal variances.

Chronic Endpoints															
Sample Number	Replicate	Start Count	End of Test			Emerged			Eggs			Number of Days Survived			
			Larvae Survived	Females #	Males #	Total #	Proportion	Total #	Unhatched #	Eggs /female	Female days	Ave.	Males days	Ave.	
12668	A	12	0	6	2	8	0.67	3669	435	539	18	3.6	10	5.0	
	B	12	0	4	3	7	0.58	2275	350	481	18	4.5	9	3.0	
	C	12	0	2	5	7	0.58	1372	250	561	10	5.0	20	4.0	
	D	12	0	2	8	10	0.83	0	0	0	3	3.0	33	4.7	
	E	12	0	1	8	9	0.75	0	0	0	2	2.0	30	3.8	
	F	12	0	4	7	11	0.92	703	207	124	14	3.5	32	5.3	
	G	12	0	4	7	11	0.92	2637	2637	0	14	3.5	26	3.7	
	H	12	0	1	2	3	0.25	1144	16	1126	4	4.0	5	5.0	
Average per sample						0.69				354		3.6		4.3	
12665	A	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0	
	B	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0	
	C	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0	
	D	12	0	4	1	5	0.42	3634	191	911	15	3.8	6	6.0	
	E	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0	
	F	12	0	1	4	6	0.50	1104	24	1060	5	5.0	20	5.0	
	G	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0	
	H	12	0	0	0	1	0.08	0	0	0	0	0.0	0	0.0	
Average per sample						0.13				249		1.1		1.4	

R+B  
12/21

000012

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012951	B-1-1-"CREEK SECTOR B-1	<i>Aulodrilus pigueti</i>	1	100	1	0.9
		<i>Aulodrilus pluriseta</i>	1		1	0.9
		<i>Ceratopogon sp.</i>	23		23	21.5
		<i>Culicoides sp.</i>	6		6	5.6
		<i>Einfeldia sp.</i>	57		57	53.3
		<i>Nais variabilis</i>	5		5	4.7
		<i>Neumania sp.</i>	1		1	0.9
		<i>Physella heterostropha</i>	8		8	7.5
		<i>Sphaeromias sp.</i>	3		3	2.8
		<i>Tanypus neopunctipennis</i>	2		2	1.9

**Grand Total: 107**

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012952	B-1-2-"CREEK SECTOR B-1	<i>Alaimus sp.</i>	1	100	1	0.8
		<i>Bezzia sp.</i>	3		3	2.3
		<i>Ceratopogon sp.</i>	21		21	16.0
		<i>Culicoides sp.</i>	2		2	1.5
		<i>Diptera</i>	1		1	0.8
		<i>Einfeldia sp.</i>	26		26	19.8
		<i>Enallagma sp.</i>	5		5	3.8
		<i>Erythemis sp.</i>	8		8	6.1
		<i>Isotomurus sp.</i>	3		3	2.3
		<i>Krenopelopia sp.</i>	1		1	0.8
		<i>Leucorrhinia sp.</i>	1		1	0.8
		<i>Nais variabilis</i>	10		10	7.6
		<i>Paratanytarsus sp.</i>	2		2	1.5
		<i>Physella heterostropha</i>	27		27	20.6
		<i>Sphaeromias sp.</i>	19		19	14.5
		<i>Tanypus neopunctipennis</i>	1		1	0.8

**Grand Total: 131**

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012953	B-1-3-"CREEK SECTOR B-1"	<i>Aulodrilus pigueti</i>	8	100	8	8.0
		<i>Bezzia sp.</i>	2		2	2.0
		<i>Ceratopogon sp.</i>	22		22	22.0
		<i>Culicoides sp.</i>	2		2	2.0
		<i>Einfeldia sp.</i>	31		31	31.0
		<i>Enallagma sp.</i>	1		1	1.0
		<i>Erythemis sp.</i>	3		3	3.0
		<i>Isotomurus sp.</i>	1		1	1.0
		<i>Leucorrhinia sp.</i>	1		1	1.0
		<i>Nais variabilis</i>	10		10	10.0
		<i>Physella heterostropha</i>	7		7	7.0
		<i>Pseudochironomus sp.</i>	1		1	1.0
		<i>Sphaeromias sp.</i>	10		10	10.0
		<i>Tanypus neopunctipennis</i>	1		1	1.0

**Grand Total: 100**

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012954	B-2-1-"CREEK SECTOR B-2"	<i>Arrenurus sp.</i>	1	25	4	0.8
		<i>Aulodrilus pigueti</i>	46		184	38.3
		<i>Bezzia varicolor</i>	3		12	2.5
		<i>Caenis sp.</i>	24		96	20.0
		<i>Ceratopogon sp.</i>	2		8	1.7
		<i>Cladopelma sp.</i>	1		4	0.8
		<i>Cricotopus fuscus</i>	4		16	3.3
		<i>Cricotopus laetus</i>	1		4	0.8
		<i>Einfeldia sp.</i>	2		8	1.7
		<i>Enallagma sp.</i>	7		28	5.8
		<i>Erythemis sp.</i>	1		4	0.8
		<i>Hydroptila ajax</i>	2		8	1.7
		<i>Krenopelopia sp.</i>	3		12	2.5
		<i>Leucorrhinia sp.</i>	1		4	0.8
		<i>Physella heterostropha</i>	18		72	15.0
		<i>Polypedilum scalaenum</i>	2		8	1.7
		<i>Tanypus carinatus</i>	1		4	0.8
		<i>Tanypus neopunctipennis</i>	1		4	0.8
<b>Grand Total:</b>						<b>480</b>

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012955	B-2-2-"CREEK SECTOR B-2"	<i>Aulodrilus pigueti</i>	12	25	48	11.5
		<i>Bezzia sp.</i>	1		4	1.0
		<i>Bezzia varicolor</i>	1		4	1.0
		<i>Caenis sp.</i>	13		52	12.5
		<i>Ceratopogon sp.</i>	1		4	1.0
		<i>Cladopelma sp.</i>	1		4	1.0
		<i>Cricotopus fuscus</i>	12		48	11.5
		<i>Cricotopus laetus</i>	5		20	4.8
		<i>Dero digitata</i>	2		8	1.9
		<i>Dicrotendipes sp.</i>	1		4	1.0
		<i>Einfeldia sp.</i>	3		12	2.9
		<i>Enallagma sp.</i>	5		20	4.8
		<i>Erythemis sp.</i>	3		12	2.9
		<i>Hydroptila ajax</i>	1		4	1.0
		<i>Krenopelopia sp.</i>	4		16	3.8
		<i>Labrundinia sp.</i>	1		4	1.0
		<i>Leucorrhinia sp.</i>	1		4	1.0
		<i>Phaenopsectra flavipes</i>	1		4	1.0
		<i>Physella heterostropha</i>	34		136	32.7
		<i>Polypedilum scalaenum</i>	1		4	1.0
		<i>Sphaeromias sp.</i>	1		4	1.0

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
<b>Grand Total: 416</b>						

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012956	B-2-3-"CREEK SECTOR B-2"	<i>Arrenurus sp.</i>	2	12.5	16	1.9
		<i>Aulodrilus pigueti</i>	28		224	26.7
		<i>Bezzia varicolor</i>	2		16	1.9
		<i>Caenis sp.</i>	18		144	17.1
		<i>Ceratopogon sp.</i>	1		8	1.0
		<i>Cladopelma sp.</i>	3		24	2.9
		<i>Cricotopus fuscus</i>	5		40	4.8
		<i>Cricotopus laetus</i>	1		8	1.0
		<i>Culicoides sp.</i>	1		8	1.0
		<i>Dero digitata</i>	5		40	4.8
		<i>Einfeldia sp.</i>	6		48	5.7
		<i>Enallagma sp.</i>	4		32	3.8
		<i>Krenopelopia sp.</i>	3		24	2.9
		<i>Leucorrhinia sp.</i>	1		8	1.0
		<i>Limnesia sp.</i>	1		8	1.0
		<i>Neumania sp.</i>	3		24	2.9
		<i>Perithemis sp.</i>	4		32	3.8
		<i>Phaenopsectra flavipes</i>	1		8	1.0
		<i>Physella heterostropha</i>	8		64	7.6
		<i>Polypedilum scalaenum</i>	5		40	4.8
		<i>Psectrocladius sp.</i>	1		8	1.0
		<i>Pseudochironomus sp.</i>	1		8	1.0

## Analytical Report

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012956	B-2-3-"CREEK SECTOR B-2"	<i>Tanypus neopunctipennis</i>	1	12.5	8	1.0
Grand Total:						840

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012957	B-3-1-"CREEK SECTOR B-3"	<i>Arrenurus sp.</i>	10	25	40	9.0
		<i>Aulodrilus pigueti</i>	7		28	6.3
		<i>Caenis sp.</i>	41		164	36.9
		<i>Ceratopogon sp.</i>	4		16	3.6
		<i>Clinotanypus sp.</i>	1		4	0.9
		<i>Cricotopus fuscus</i>	1		4	0.9
		<i>Cricotopus laetus</i>	1		4	0.9
		<i>Einfeldia sp.</i>	13		52	11.7
		<i>Enallagma sp.</i>	3		12	2.7
		<i>Krenopelopia sp.</i>	1		4	0.9
		<i>Limnodrilus claparedianus</i>	1		4	0.9
		<i>Microchironomus sp.</i>	1		4	0.9
		<i>Mideopsis sp.</i>	11		44	9.9
		<i>Neumania sp.</i>	4		16	3.6
		<i>Oxus sp.</i>	2		8	1.8
		<i>Procladius sp.</i>	1		4	0.9
		<i>Siphlonurus alternatus</i>	5		20	4.5
		<i>Tanypus neopunctipennis</i>	2		8	1.8
		<i>Tiphys sp.</i>	2		8	1.8

**Grand Total: 444**

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012958	B-3-2-"CREEK SECTOR B-3"	<i>Arrenurus sp.</i>	1	50	2	1.1
		<i>Aulodrilus pigueti</i>	13		26	14.0
		<i>Caenis sp.</i>	27		54	29.0
		<i>Ceratopogon sp.</i>	2		4	2.2
		<i>Cricotopus fuscus</i>	1		2	1.1
		<i>Cricotopus laetus</i>	3		6	3.2
		<i>Cryptotendipes sp.</i>	1		2	1.1
		<i>Dero digitata</i>	1		2	1.1
		<i>Dicrotendipes sp.</i>	1		2	1.1
		<i>Einfeldia sp.</i>	17		34	18.3
		<i>Enallagma sp.</i>	3		6	3.2
		<i>Hydroptila ajax</i>	2		4	2.2
		<i>Krenopelopia sp.</i>	1		2	1.1
		<i>Microchironomus sp.</i>	2		4	2.2
		<i>Mideopsis sp.</i>	2		4	2.2
		<i>Neumania sp.</i>	2		4	2.2
		<i>Polypedilum scalaenum</i>	1		2	1.1
		<i>Procladius sp.</i>	1		2	1.1
		<i>Siphlonurus alternatus</i>	1		2	1.1
		<i>Sphaeromias sp.</i>	2		4	2.2
		<i>Tanypus neopunctipennis</i>	4		8	4.3
		<i>Tanytarsus guerlusi</i>	4		8	4.3

## Analytical Report

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
012958	B-3-2-"CREEK SECTOR B-3"	<i>Tanytarsus sp.</i>	1	50	2	1.1
<b>Grand Total:</b>						186

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
012959	B-3-3-"CREEK SECTOR B-3"	<i>Aulodrilus pigueti</i>	34	25	136	33.0
		<i>Caenis sp.</i>	16		64	15.5
		<i>Ceratopogon sp.</i>	4		16	3.9
		<i>Cladopelma sp.</i>	9		36	8.7
		<i>Clinotanypus sp.</i>	3		12	2.9
		<i>Dero digitata</i>	6		24	5.8
		<i>Einfeldia sp.</i>	5		20	4.9
		<i>Enallagma sp.</i>	2		8	1.9
		<i>Hydroptila ajax</i>	3		12	2.9
		<i>Ilyodrilus templetoni</i>	1		4	1.0
		<i>Krenopelopia sp.</i>	2		8	1.9
		<i>Microchironomus sp.</i>	1		4	1.0
		<i>Mideopsis sp.</i>	1		4	1.0
		<i>Neumania sp.</i>	1		4	1.0
		<i>Physella heterostropha</i>	3		12	2.9
		<i>Polypedilum scalaenum</i>	2		8	1.9
		<i>Psectrocladius sp.</i>	1		4	1.0
		<i>Sphaeromias sp.</i>	2		8	1.9
		<i>Tanypus neopunctipennis</i>	1		4	1.0
		<i>Tanytarsus guerlusi</i>	5		20	4.9
		<i>Tiphys sp.</i>	1		4	1.0

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
<b>Grand Total:</b>						<b>412</b>
012960	M-1-"SITE M"	<i>Caenis sp.</i>	25	100	25	71.4
		<i>Chaoborus punctipennis</i>	3		3	8.6
		<i>Dero digitata</i>	2		2	5.7
		<i>Enallagma sp.</i>	1		1	2.9
		<i>Erythemis sp.</i>	2		2	5.7
		<i>Physella heterostropha</i>	2		2	5.7
<b>Grand Total:</b>						<b>35</b>
012961	M-2-"SITE M"	<i>Krenopelopia sp.</i>	1	100	1	100.0
<b>Grand Total:</b>						<b>1</b>
012962	M-3-"SITE M"	<i>Caenis sp.</i>	4	100	4	28.6
		<i>Chaoborus punctipennis</i>	4		4	28.6
		<i>Cyphon sp.</i>	1		1	7.1
		<i>Enallagma sp.</i>	3		3	21.4
		<i>Erythemis sp.</i>	1		1	7.1
		<i>Isotomurus sp.</i>	1		1	7.1
<b>Grand Total:</b>						<b>14</b>

## Analytical Report

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012963	C-2-2-"CREEK SECTOR C-2"	<i>Aphrosylus praedator</i>	1	50	2	5.0
		<i>Arrenurus sp.</i>	1		2	5.0
		<i>Erythemis sp.</i>	1		2	5.0
		<i>Eylais sp.</i>	1		2	5.0
		<i>Ilyodrilus templetoni</i>	7		14	35.0
		<i>Physella heterostropha</i>	5		10	25.0
		<i>Sphaeromias sp.</i>	3		6	15.0
		<i>Tipula sp.</i>	1		2	5.0
Grand Total:						40

## Analytical Report

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012964	C-3-3-"CREEK SECTOR C-3"	<i>Arrenurus sp.</i>	3	50	6	6.4
		<i>Ilyodrilus templetoni</i>	1		2	2.1
		<i>Lauterborniella sp.</i>	3		6	6.4
		<i>Leucorrhinia sp.</i>	1		2	2.1
		<i>Mesovelia sp.</i>	1		2	2.1
		<i>Neumania sp.</i>	2		4	4.3
		<i>Physella heterostropha</i>	31		62	66.0
		<i>Polypedilum illinoense</i>	1		2	2.1
		<i>Tanypus carinatus</i>	2		4	4.3
		<i>Tiphys sp.</i>	2		4	4.3
Grand Total:						94

## Analytical Report

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012965	F-3-3-"CREEK SECTOR F-3"	<i>Branchiura sowerbyi</i>	26	50	52	44.1
		<i>Ceratopogon sp.</i>	1		2	1.7
		<i>Diptera</i>	3		6	5.1
		<i>Krenopelopia sp.</i>	3		6	5.1
		<i>Limnodrilus hoffmeisteri</i>	11		22	18.6
		<i>Limonia sp.</i>	1		2	1.7
		<i>Physella heterostropha</i>	1		2	1.7
		<i>Polydipilum illinoense</i>	10		20	16.9
		<i>Sphaeromias sp.</i>	3		6	5.1

Grand Total: 118

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012966	C-1-1-"CREEK SECTOR C-1"	<i>Bezzia varicolor</i>	2	50	4	6.9
		<i>Ceratopogon sp.</i>	1		2	3.4
		<i>Diptera</i>	2		4	6.9
		<i>Einfeldia sp.</i>	7		14	24.1
		<i>Ormosia sp.</i>	4		8	13.8
		<i>Physella heterostropha</i>	1		2	3.4
		<i>Probezzia sp.</i>	3		6	10.3
		<i>Sphaeromias sp.</i>	8		16	27.6
		<i>Stratiomys sp.</i>	1		2	3.4
<b>Grand Total:</b>						<b>58</b>
012967	C-1-2-"CREEK SECTOR C-1"	<i>Arrenurus sp.</i>	1	50	2	1.1
		<i>Bezzia sp.</i>	11		22	12.1
		<i>Ceratopogon sp.</i>	3		6	3.3
		<i>Culicoides sp.</i>	7		14	7.7
		<i>Einfeldia sp.</i>	2		4	2.2
		<i>Ormosia sp.</i>	2		4	2.2
		<i>Physella heterostropha</i>	11		22	12.1
		<i>Sphaeromias sp.</i>	54		108	59.3
<b>Grand Total:</b>						<b>182</b>

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

### Reference: SAUGET,IL

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012968	C-1-3-"CREEK SECTOR C-1"	<i>Arrenurus sp.</i>	1	50	2	2.8
		<i>Ceratopogon sp.</i>	1		2	2.8
		<i>Culicoides sp.</i>	3		6	8.3
		<i>Einfeldia sp.</i>	7		14	19.4
		<i>Ormosia sp.</i>	7		14	19.4
		<i>Physella heterostropha</i>	6		12	16.7
		<i>Sphaeromias sp.</i>	10		20	27.8
		<i>Tropisternus sp.</i>	1		2	2.8
<b>Grand Total:</b>						<b>72</b>
012969	C-2-1-"CREEK SECTOR C-2"	<i>Bezzia sp.</i>	1	50	2	7.1
		<i>Brachypremna sp.</i>	1		2	7.1
		<i>Dero digitata</i>	1		2	7.1
		<i>Dero vaga</i>	1		2	7.1
		<i>Gonomyia sp.</i>	1		2	7.1
		<i>Ilyodrilus templetoni</i>	5		10	35.7
		<i>Physella heterostropha</i>	1		2	7.1
		<i>Psychoda sp.</i>	1		2	7.1
		<i>Sphaeromias sp.</i>	2		4	14.3
<b>Grand Total:</b>						<b>28</b>

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
012970	C-2-3-"CREEK SECTOR C-2"	<i>Arrenurus sp.</i>	1	50	2	6.7
		<i>Bezzia sp.</i>	2		4	13.3
		<i>Einfeldia sp.</i>	1		2	6.7
		<i>Ilyodrilus templetoni</i>	1		2	6.7
		<i>Physella heterostropha</i>	5		10	33.3
		<i>Sphaeromias sp.</i>	3		6	20.0
		<i>Tiphys sp.</i>	1		2	6.7
		<i>Tipula sp.</i>	1		2	6.7
<b>Grand Total:</b>						<b>30</b>
012971	C-3-1-"CREEK SECTOR C-3"	<i>Arrenurus sp.</i>	2	50	4	4.2
		<i>Helophorus sp.</i>	2		4	4.2
		<i>Ilyodrilus templetoni</i>	1		2	2.1
		<i>Lauterborniella sp.</i>	2		4	4.2
		<i>Leucorrhinia sp.</i>	1		2	2.1
		<i>Mooreobdella microstoma</i>	1		2	2.1
		<i>Physella heterostropha</i>	37		74	77.1
		<i>Stratiomys sp.</i>	1		2	2.1
<b>Grand Total:</b>						<b>96</b>

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012972	C-3-2-"CREEK SECTOR C-3"	<i>Arrenurus sp.</i>	2	50	4	5.7
		<i>Enallagma sp.</i>	1		2	2.9
		<i>Erythemis sp.</i>	1		2	2.9
		<i>Laccornis sp.</i>	1		2	2.9
		<i>Lauterborniella sp.</i>	5		10	14.3
		<i>Mesovelia sp.</i>	1		2	2.9
		<i>Physella heterostropha</i>	20		40	57.1
		<i>Stratiomys sp.</i>	1		2	2.9
		<i>Tanypus carinatus</i>	1		2	2.9
		<i>Tiphys sp.</i>	1		2	2.9
		<i>Tropisternus sp.</i>	1		2	2.9
<b>Grand Total:</b>						<b>70</b>

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012973	REF2-1-1- "REFERENCE LOCATION 2-1"	<i>Ceratopogon sp.</i>	1	10	10	0.6
		<i>Ephydria subopaca</i>	6		60	3.7
		<i>Limnodrilus hoffmeisteri</i>	149		1490	90.9
		<i>Limnodrilus udekemianus</i>	1		10	0.6
		<i>Nais variabilis</i>	1		10	0.6
		<i>Palaemonetes kadiakensis</i>	2		20	1.2
		<i>Physella heterostropha</i>	2		20	1.2
		<i>Tanypus neopunctipennis</i>	2		20	1.2

**Grand Total: 1640**

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012974	REF2-1-2- "REFERENCE LOCATION 2-1"	<i>Aulodrilus pluriseta</i>	1	10	10	0.8
		<i>Ceratopogon sp.</i>	2		20	1.6
		<i>Culicoides sp.</i>	1		10	0.8
		<i>Limnodrilus hoffmeisteri</i>	115		1150	89.1
		<i>Physella heterostropha</i>	3		30	2.3
		<i>Psammoryctides californianus</i>	1		10	0.8
		<i>Sigara sp.</i>	1		10	0.8
		<i>Sphaeromias sp.</i>	1		10	0.8
		<i>Tanypus neopunctipennis</i>	2		20	1.6
		<i>Trichocorixa sp.</i>	2		20	1.6

**Grand Total: 1290**

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
012975	REF2-1-3- "REFERENCE LOCATION 2-1"	<i>Aulodrilus pluriseta</i>	2	10	20	1.3
		<i>Bezzia sp.</i>	1		10	0.7
		<i>Ceratopogon sp.</i>	5		50	3.4
		<i>Culicoides sp.</i>	60		600	40.3
		<i>Dero digitata</i>	1		10	0.7
		<i>Limnodrilus hoffmeisteri</i>	50		500	33.6
		<i>Sphaeromias sp.</i>	1		10	0.7
		<i>Tanypus neopunctipennis</i>	28		280	18.8
		<i>Trichocorixa sp.</i>	1		10	0.7
<b>Grand Total:</b> 1490						

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012976	REF2-2-1- "REFERENCE LOCATION 2-2"	<i>Aulodrilus pigueti</i>	1	100	1	2.7
		<i>Ceratopogon sp.</i>	8		8	21.6
		<i>Dero digitata</i>	1		1	2.7
		<i>Limnodrilus hoffmeisteri</i>	22		22	59.5
		<i>Ormosia sp.</i>	1		1	2.7
		<i>Psectrocladius sp.</i>	1		1	2.7
		<i>Sphaeromias sp.</i>	1		1	2.7
		<i>Tanypus neopunctipennis</i>	1		1	2.7
		<i>Tanytarsus sp.</i>	1		1	2.7
				<b>Grand Total:</b>	<b>37</b>	
012977	REF-2-2- "REFERENCE LOCATION 2-2"	<i>Ablabesmyia annulata</i>	1	100	1	7.1
		<i>Limnodrilus hoffmeisteri</i>	13		13	92.9
				<b>Grand Total:</b>	<b>14</b>	

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012978	REF-2-3- "REFERENCE LOCATION 2-2"	<i>Chironomus salinarius</i>	8	100	8	22.2
		<i>Limnodrilus hoffmeisteri</i>	25		25	69.4
		<i>Polypedilum scalaenum</i>	1		1	2.8
		<i>Tanypus neopunctipennis</i>	1		1	2.8
		<i>Trichocorixa sp.</i>	1		1	2.8
				<b>Grand Total:</b>	<b>36</b>	
012979	PDC-1-1-"PRARIE DUPONT CREEK-1"	<i>Ceratopogon sp.</i>	1	100	1	1.3
		<i>Chaoborus punctipennis</i>	1		1	1.3
		<i>Dero digitata</i>	2		2	2.5
		<i>Ilyodrilus templetoni</i>	2		2	2.5
		<i>Limnodrilus hoffmeisteri</i>	71		71	89.9
		<i>Psammoryctides californianus</i>	2		2	2.5
				<b>Grand Total:</b>	<b>79</b>	
012980	PDC-1-2-"PRARIE DUPONT CREEK-1"	<i>Bezzia sp.</i>	1	100	1	16.7
		<i>Ceratopogon sp.</i>	1		1	16.7
		<i>Limnodrilus hoffmeisteri</i>	4		4	66.7
				<b>Grand Total:</b>	<b>6</b>	

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
012981	PDC-1-3-"PRARIE DUPONT CREEK-1"	<i>Ceratopogon sp.</i>	2	100	2	28.6
		<i>Limnodrilus hoffmeisteri</i>	4		4	57.1
		<i>Tanypus neopunctipennis</i>	1		1	14.3
		<b>Grand Total:</b>		<b>7</b>		
012982	PDC-2-1-"PRARIE DUPONT CREEK-2"	<i>Lampsilis sp.</i>	1	100	1	25.0
		<i>Limnodrilus hoffmeisteri</i>	3		3	75.0
		<b>Grand Total:</b>		<b>4</b>		
012983	PDC-2-2-"PRARIE DUPONT CREEK-2"	<i>Dero digitata</i>	1	100	1	2.8
		<i>Ilyodrilus templetoni</i>	3		3	8.3
		<i>Limnodrilus hoffmeisteri</i>	30		30	83.3
		<i>Palaemonetes kadiakensis</i>	1		1	2.8
		<i>Psammoryctides californianus</i>	1		1	2.8
		<b>Grand Total:</b>		<b>36</b>		

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012984	PDC-2-3-"PRARIE DUPONT CREEK-2"	<i>Chaoborus punctipennis</i>	2	50	4	3.7
		<i>Chironomus decorus</i>	1		2	1.9
		<i>Dero digitata</i>	1		2	1.9
		<i>Limnodrilus hoffmeisteri</i>	49		98	90.7
		<i>Procladius sp.</i>	1		2	1.9
<b>Grand Total:</b>						<b>108</b>
012985	BP-1-1-"BORROW PIT LAKE-1"	<i>Branchiura sowerbyi</i>	3	50	6	17.6
		<i>Ceratopogon sp.</i>	1		2	5.9
		<i>Limnodrilus hoffmeisteri</i>	3		6	17.6
		<i>Mooreobdella microstoma</i>	1		2	5.9
		<i>Natarsia sp.</i>	1		2	5.9
		<i>Palmaeoxixa sp.</i>	2		4	11.8
		<i>Perithemis sp.</i>	5		10	29.4
		<i>Tanypus neopunctipennis</i>	1		2	5.9
<b>Grand Total:</b>						<b>34</b>

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012986	BP-1-2-"BORROW PIT LAKE -1"	<i>Arigomphus sp.</i>	1	50	2	4.3
		<i>Aulodrilus pigueti</i>	1		2	4.3
		<i>Branchiura sowerbyi</i>	1		2	4.3
		<i>Caenis sp.</i>	2		4	8.7
		<i>Cryptotendipes sp.</i>	1		2	4.3
		<i>Dero digitata</i>	3		6	13.0
		<i>Hydroptila ajax</i>	1		2	4.3
		<i>Limnodrilus hoffmeisteri</i>	4		8	17.4
		<i>Mooreobdella microstoma</i>	2		4	8.7
		<i>Palmacorixa sp.</i>	3		6	13.0
		<i>Perithemis sp.</i>	2		4	8.7
		<i>Tanypus neopunctipennis</i>	2		4	8.7

**Grand Total: 46**

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012987	BP-1-3-"BORROW PIT LAKE-1"	<i>Alaimus sp.</i>	1	50	2	4.3
		<i>Berosus sp.</i>	1		2	4.3
		<i>Branchiura sowerbyi</i>	1		2	4.3
		<i>Caenis sp.</i>	1		2	4.3
		<i>Ceratopogon sp.</i>	2		4	8.7
		<i>Ilyodrilus templetoni</i>	1		2	4.3
		<i>Limnodrilus hoffmeisteri</i>	7		14	30.4
		<i>Mooreobdella microstoma</i>	1		2	4.3
		<i>Perithemis sp.</i>	2		4	8.7
		<i>Tanypus neopunctipennis</i>	1		2	4.3
		<i>Trichocorixa sp.</i>	5		10	21.7
<b>Grand Total:</b>						<b>46</b>

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
012988	BP-2-2-"BORROW PIT LAKE-2"	<i>Branchiura sowerbyi</i>	2	50	4	6.9
		<i>Ceratopogon sp.</i>	1		2	3.4
		<i>Chironomus salinarius</i>	3		6	10.3
		<i>Clinotanypus sp.</i>	2		4	6.9
		<i>Ilyodrilus templetoni</i>	4		8	13.8
		<i>Limnodrilus hoffmeisteri</i>	13		26	44.8
		<i>Procladius sp.</i>	3		6	10.3
		<i>Tanypus neopunctipennis</i>	1		2	3.4
<b>Grand Total:</b>						<b>58</b>

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
012989	BP-2-3-"BORROW PIT LAKE-2"	<i>Arigomphus sp.</i>	1	50	2	2.2
		<i>Branchiura sowerbyi</i>	2	4	4	4.4
		<i>Ceratopogon sp.</i>	7	14	14	15.6
		<i>Chironomus decorus</i>	2	4	4	4.4
		<i>Cladopelma sp.</i>	1	2	2	2.2
		<i>Clinotanypus sp.</i>	1	2	2	2.2
		<i>Dero digitata</i>	6	12	12	13.3
		<i>Limnodrilus hoffmeisteri</i>	18	36	36	40.0
		<i>Procladius sp.</i>	1	2	2	2.2
		<i>Tanypus neopunctipennis</i>	1	2	2	2.2
		<i>Tanypus stellatus</i>	2	4	4	4.4
		<i>Tanytarsus sp.</i>	2	4	4	4.4
		<i>Tipulidae</i>	1	2	2	2.2

**Grand Total: 90**

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
012990	BP-3-2-"BORROW PIT LAKE-3"	<i>Branchiura sowerbyi</i>	2	100	2	12.5
		<i>Ceratopogon sp.</i>	1		1	6.3
		<i>Dero digitata</i>	1		1	6.3
		<i>Limnodrilus hoffmeisteri</i>	7		7	43.8
		<i>Perithemis sp.</i>	1		1	6.3
		<i>Plathemis sp.</i>	1		1	6.3
		<i>Sphaeromias sp.</i>	1		1	6.3
		<i>Tanypus neopunctipennis</i>	1		1	6.3
		<i>Tanytarsus sp.</i>	1		1	6.3
<b>Grand Total:</b>						<b>16</b>

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
012991	BP-3-3-"BORROW PIT LAKE-3"	<i>Bezzia sp.</i>	1	100	1	2.0
		<i>Branchiura sowerbyi</i>	5		5	9.8
		<i>Ceratopogon sp.</i>	2		2	3.9
		<i>Chaoborus punctipennis</i>	1		1	2.0
		<i>Cryptochironomus fulvus</i>	1		1	2.0
		<i>Dero digitata</i>	3		3	5.9
		<i>Limnodrilus hoffmeisteri</i>	36		36	70.6
		<i>Perithemis sp.</i>	1		1	2.0
		<i>Tanypus neopunctipennis</i>	1		1	2.0
<b>Grand Total:</b>						<b>51</b>

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
012992	BP-3-1-"BORROW PIT LAKE-3"	<i>Aulodrilus pigueti</i>	1	100	1	1.2
		<i>Branchiura sowerbyi</i>	9		9	10.7
		<i>Ceratopogon sp.</i>	5		5	6.0
		<i>Clinotanypus sp.</i>	1		1	1.2
		<i>Cryptochironomus fulvus</i>	3		3	3.6
		<i>Dero digitata</i>	16		16	19.0
		<i>Limnodrilus hoffmeisteri</i>	42		42	50.0
		<i>Perithemis sp.</i>	2		2	2.4
		<i>Sphaeromias sp.</i>	1		1	1.2
		<i>Tanypus neopunctipennis</i>	4		4	4.8

**Grand Total: 84**

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012993	D-1-2-"CREEK SECTOR D-1"	<i>Arrenurus sp.</i>	1	50	2	1.9
		<i>Cladopelma sp.</i>	1		2	1.9
		<i>Dero digitata</i>	1		2	1.9
		<i>Einfeldia sp.</i>	25		50	48.1
		<i>Ilyodrilus templetoni</i>	12		24	23.1
		<i>Limnodrilus claparedianus</i>	1		2	1.9
		<i>Sphaerium sp.</i>	1		2	1.9
		<i>Sphaeromias sp.</i>	10		20	19.2
<b>Grand Total:</b>						<b>104</b>

## Analytical Report

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
012994	D-1-3-"CREEK SECTOR D-1"	<i>Arrenurus sp.</i>	2	50	4	4.2
		<i>Bezzia sp.</i>	1		2	2.1
		<i>Ceratopogon sp.</i>	1		2	2.1
		<i>Culicoides sp.</i>	5		10	10.4
		<i>Dero digitata</i>	1		2	2.1
		<i>Einfeldia sp.</i>	23		46	47.9
		<i>Ilyodrilus templetoni</i>	6		12	12.5
		<i>Mideopsis sp.</i>	3		6	6.3
		<i>Sphaerium sp.</i>	1		2	2.1
		<i>Sphaeromias sp.</i>	5		10	10.4
				Grand Total:	96	

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
012995	BP-2-1-"BORROW PIT LAKE-2"	<i>Arigomphus sp.</i>	1	50	2	1.8
		<i>Aulodrilus pigueti</i>	4		8	7.0
		<i>Branchiura sowerbyi</i>	2		4	3.5
		<i>Ceratopogon sp.</i>	3		6	5.3
		<i>Chironomus salinarius</i>	1		2	1.8
		<i>Clinotanypus sp.</i>	2		4	3.5
		<i>Culicoides sp.</i>	1		2	1.8
		<i>Dero digitata</i>	6		12	10.5
		<i>Ilyodrilus templetoni</i>	5		10	8.8
		<i>Limnodrilus hoffmeisteri</i>	27		54	47.4
		<i>Tanypus neopunctipennis</i>	2		4	3.5
		<i>Tanypus stellatus</i>	3		6	5.3

**Grand Total: 114**

## Analytical Report

Charlie Menzie  
 Menzie-Cura & Associates  
 1 Courthouse Lane  
 Chelmsford, MA 01824

Date : 12/23/99  
 BTR No. : 03703  
 Project No. : 99033  
 No. of Samples : 69  
 Date Received : 10/26/99

Reference: SAUGET,IL

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012996	D-2-3-"CREEK SECTOR D-2"	<i>Ceratopogon sp.</i>	2	50	4	12.5
		<i>Culicoides sp.</i>	1		2	6.3
		<i>Dero digitata</i>	1		2	6.3
		<i>Einfeldia sp.</i>	8		16	50.0
		<i>Sphaerium sp.</i>	1		2	6.3
		<i>Sphaeromias sp.</i>	2		4	12.5
		<i>Tanyptus neopunctipennis</i>	1		2	6.3
<b>Grand Total:</b>						<b>32</b>
012997	D-1-1-"CREEK SECTOR D-1"	<i>Ceratopogon sp.</i>	1	50	2	1.7
		<i>Einfeldia sp.</i>	11		22	18.3
		<i>Ilyodrilus templetoni</i>	35		70	58.3
		<i>Limnodrilus hoffmeisteri</i>	8		16	13.3
		<i>Physella heterostropha</i>	1		2	1.7
		<i>Sphaerium sp.</i>	1		2	1.7
		<i>Sphaeromias sp.</i>	3		6	5.0
<b>Grand Total:</b>						<b>120</b>

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
012998	E-1-1-"CREEK SECTOR E-1"	<i>Bezzia varicolor</i>	1	50	2	5.3
		<i>Chauliodes sp.</i>	1		2	5.3
		<i>Culicoides sp.</i>	2		4	10.5
		<i>Enallagma sp.</i>	1		2	5.3
		<i>Enochrus sp.</i>	1		2	5.3
		<i>Isotomurus sp.</i>	1		2	5.3
		<i>Limnophora torreyae</i>	1		2	5.3
		<i>Musculium sp.</i>	1		2	5.3
		<i>Neoplea sp.</i>	2		4	10.5
		<i>Physella heterostropha</i>	3		6	15.8
		<i>Polypedilum illinoense</i>	1		2	5.3
		<i>Sphaeromias sp.</i>	1		2	5.3
		<i>Tanypus carinatus</i>	3		6	15.8
<b>Grand Total:</b>						<b>38</b>

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
012999	E-1-2-"CREEK SECTOR E-1"	<i>Aphrosylus praedator</i>	2	50	4	5.3
		<i>Berosus sp.</i>	1		2	2.6
		<i>Bezzia varicolor</i>	1		2	2.6
		<i>Culicoides sp.</i>	7		14	18.4
		<i>Enallagma sp.</i>	1		2	2.6
		<i>Ilyodrilus templetoni</i>	1		2	2.6
		<i>Mesovelia sp.</i>	1		2	2.6
		<i>Musculium sp.</i>	3		6	7.9
		<i>Neoplea sp.</i>	5		10	13.2
		<i>Physella heterostropha</i>	8		16	21.1
		<i>Pseudosuccinea columella</i>	1		2	2.6
		<i>Sphaeromias sp.</i>	2		4	5.3
		<i>Tanypus carinatus</i>	5		10	13.2
<b>Grand Total:</b> 76						

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

### Reference: SAUGET,IL

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
013000	E-1-3-"CREEK SECTOR E-1"	<i>Acentria sp.</i>	1	50	2	2.8
		<i>Bezzia varicolor</i>	1		2	2.8
		<i>Culicoides sp.</i>	3		6	8.3
		<i>Dero vaga</i>	1		2	2.8
		<i>Ilyodrilus templetoni</i>	1		2	2.8
		<i>Limnodrilus claparedianus</i>	1		2	2.8
		<i>Musculium sp.</i>	4		8	11.1
		<i>Neoplea sp.</i>	10		20	27.8
		<i>Peltodytes sp.</i>	1		2	2.8
		<i>Physella heterostropha</i>	8		16	22.2
		<i>Polypedilum illinoense</i>	2		4	5.6
		<i>Pseudosuccinea columella</i>	1		2	2.8
		<i>Tanypus carinatus</i>	2		4	5.6
<b>Grand Total:</b>						<b>72</b>

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
013001	E-2-1-"CREEK SECTOR E-2"	<i>Acentria sp.</i>	1	50	2	1.4
		<i>Arrenurus sp.</i>	1		2	1.4
		<i>Bezzia sp.</i>	1		2	1.4
		<i>Culicoides sp.</i>	48		96	65.8
		<i>Cyphon sp.</i>	1		2	1.4
		<i>Einfeldia sp.</i>	1		2	1.4
		<i>Neoplea sp.</i>	1		2	1.4
		<i>Physella heterostropha</i>	12		24	16.4
		<i>Pseudosuccinea columella</i>	1		2	1.4
		<i>Sphaeromias sp.</i>	5		10	6.8
		<i>Tanypus neopunctipennis</i>	1		2	1.4

**Grand Total: 146**

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
013002	E-2-2-"CREEK SECTOR E-2"	<i>Bezzia sp.</i>	4	50	8	4.4
		<i>Ceratopogon sp.</i>	1		2	1.1
		<i>Culicoides sp.</i>	67		134	73.6
		<i>Einfeldia sp.</i>	6		12	6.6
		<i>Limnesia sp.</i>	1		2	1.1
		<i>Muscidae</i>	1		2	1.1
		<i>Neoplea sp.</i>	1		2	1.1
		<i>Peltodytes sp.</i>	1		2	1.1
		<i>Physella heterostropha</i>	4		8	4.4
		<i>Polydiplosis illinoense</i>	1		2	1.1
		<i>Pseudosuccinea columella</i>	1		2	1.1
		<i>Sphaeromias sp.</i>	2		4	2.2
		<i>Tanypterus neopunctipennis</i>	1		2	1.1

**Grand Total: 182**

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
013003	E-2-3-"CREEK SECTOR E-2"	<i>Berosus sp.</i>	1	50	2	1.3
		<i>Bezzia sp.</i>	2		4	2.5
		<i>Ceratopogon sp.</i>	1		2	1.3
		<i>Culicoides sp.</i>	63		126	78.8
		<i>Einfeldia sp.</i>	4		8	5.0
		<i>Neoplea sp.</i>	1		2	1.3
		<i>Physella heterostropha</i>	4		8	5.0
		<i>Pseudosuccinea columella</i>	1		2	1.3
		<i>Sphaeromias sp.</i>	3		6	3.8
				<b>Grand Total:</b>	<b>160</b>	
013004	E-3-1-"CREEK SECTOR E-3"	<i>Culicoides sp.</i>	2	50	4	33.3
		<i>Dero digitata</i>	1		2	16.7
		<i>Ilyodrilus templettoni</i>	1		2	16.7
		<i>Leucorrhinia sp.</i>	1		2	16.7
		<i>Limnodrilus claparedianus</i>	1		2	16.7
				<b>Grand Total:</b>	<b>12</b>	

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
013005	E-3-2-"CREEK SECTOR E-3"	<i>Ceratopogon sp.</i>	5	50	10	10.2
		<i>Culicoides sp.</i>	2		4	4.1
		<i>Dero digitata</i>	25		50	51.0
		<i>Einfeldia sp.</i>	3		6	6.1
		<i>Ilyodrilus templetoni</i>	8		16	16.3
		<i>Limnodrilus hoffmeisteri</i>	2		4	4.1
		<i>Musculium sp.</i>	1		2	2.0
		<i>Nais variabilis</i>	1		2	2.0
		<i>Sphaeromias sp.</i>	2		4	4.1
<b>Grand Total:</b>						<b>98</b>
013006	E-3-3-"CREEK SECTOR E-3"	<i>Chironomus tentipediformis</i>	1	50	2	4.5
		<i>Dero digitata</i>	5		10	22.7
		<i>Ilyodrilus templetoni</i>	8		16	36.4
		<i>Krenopelopia sp.</i>	1		2	4.5
		<i>Leucorrhinia sp.</i>	3		6	13.6
		<i>Limnodrilus hoffmeisteri</i>	1		2	4.5
		<i>Musculium sp.</i>	2		4	9.1
		<i>Sphaeromias sp.</i>	1		2	4.5
<b>Grand Total:</b>						<b>44</b>

## Analytical Report

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
013007	D-2-1-"CREEK SECTOR D-2"	<i>Ceratopogon sp.</i>	1	50	2	2.6
		<i>Culicoides sp.</i>	4		8	10.5
		<i>Dero digitata</i>	1		2	2.6
		<i>Einfeldia sp.</i>	16		32	42.1
		<i>Ilyodrilus templetoni</i>	1		2	2.6
		<i>Libellula sp.</i>	1		2	2.6
		<i>Limnodrilus hoffmeisteri</i>	2		4	5.3
		<i>Mooreobdella microstoma</i>	1		2	2.6
		<i>Sphaeromias sp.</i>	11		22	28.9
<b>Grand Total:</b> 76						

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
013008	D-2-2-"CREEK SECTOR D-2"	<i>Arrenurus sp.</i>	2	50	4	5.9
		<i>Culicoides sp.</i>	2		4	5.9
		<i>Einfeldia sp.</i>	13		26	38.2
		<i>Ilyodrilus templetoni</i>	3		6	8.8
		<i>Limnodrilus cervix</i>	1		2	2.9
		<i>Limnodrilus claparedianus</i>	2		4	5.9
		<i>Limnodrilus hoffmeisteri</i>	3		6	8.8
		<i>Mooreobdella microstoma</i>	1		2	2.9
		<i>Sphaerium sp.</i>	4		8	11.8
		<i>Sphaeromias sp.</i>	3		6	8.8
<b>Grand Total:</b>						<b>68</b>

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
013009	D-3-1-"CREEK SECTOR D-3"	<i>Arrenurus sp.</i>	2	100	2	4.4
		<i>Aulodrilus pigueti</i>	1		1	2.2
		<i>Culicoides sp.</i>	7		7	15.6
		<i>Dero digitata</i>	3		3	6.7
		<i>Einfeldia sp.</i>	2		2	4.4
		<i>Ilyodrilus templetoni</i>	13		13	28.9
		<i>Limnodrilus claparedianus</i>	1		1	2.2
		<i>Limnodrilus hoffmeisteri</i>	13		13	28.9
		<i>Mideopsis sp.</i>	1		1	2.2
		<i>Sphaerium sp.</i>	1		1	2.2
		<i>Tanypus neopunctipennis</i>	1		1	2.2
<b>Grand Total:</b>						<b>45</b>

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
013010	D-3-2-"CREEK SECTOR D-3"	<i>Arrenurus sp.</i>	2	50	4	6.3
		<i>Bezzia sp.</i>	1		2	3.1
		<i>Ceratopogon sp.</i>	1		2	3.1
		<i>Culicoides sp.</i>	1		2	3.1
		<i>Einfeldia sp.</i>	6		12	18.8
		<i>Ilyodrilus templetoni</i>	8		16	25.0
		<i>Limnodrilus hoffmeisteri</i>	9		18	28.1
		<i>Sphaeromias sp.</i>	3		6	9.4
		<i>Tiphys sp.</i>	1		2	3.1
<b>Grand Total:</b>						<b>64</b>
013011	D-3-3-"CREEK SECTOR D-3"	<i>Arrenurus sp.</i>	1	50	2	3.2
		<i>Culicoides sp.</i>	5		10	16.1
		<i>Einfeldia sp.</i>	5		10	16.1
		<i>Ilyodrilus templetoni</i>	11		22	35.5
		<i>Limnodrilus hoffmeisteri</i>	5		10	16.1
		<i>Mideopsis sp.</i>	1		2	3.2
		<i>Perithemis sp.</i>	1		2	3.2
		<i>Sphaeromias sp.</i>	2		4	6.5
<b>Grand Total:</b>						<b>62</b>

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
013012	F-1-1-"CREEK SECTOR F-1"	<i>Acentria sp.</i>	1	50	2	3.8
		<i>Branchiura sowerbyi</i>	3		6	11.5
		<i>Ceratopogon sp.</i>	1		2	3.8
		<i>Chironomus decorus</i>	1		2	3.8
		<i>Chironomus sp.</i>	1		2	3.8
		<i>Culicoides sp.</i>	3		6	11.5
		<i>Einfeldia sp.</i>	4		8	15.4
		<i>Haemonais waldvogeli</i>	1		2	3.8
		<i>Hydrochus sp.</i>	1		2	3.8
		<i>Limnodrilus claparedianus</i>	1		2	3.8
		<i>Neoplea sp.</i>	1		2	3.8
		<i>Polypedilum illinoense</i>	5		10	19.2
		<i>Sphaerium sp.</i>	2		4	7.7
		<i>Tanypus carinatus</i>	1		2	3.8
<b>Grand Total:</b>						<b>52</b>

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	TAXON	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
013013	F-1-2-"CREEK SECTOR F-1"	<i>Ceratopogon sp.</i>	1	50	2	3.3
		<i>Chironomus sp.</i>	17		34	56.7
		<i>Limnodrilus claparedianus</i>	1		2	3.3
		<i>Polydipidium illinoense</i>	3		6	10.0
		<i>Sphaerium sp.</i>	8		16	26.7
				<b>Grand Total:</b>	60	
013014	F-1-3-"CREEK SECTOR F-1"	<i>Branchiura sowerbyi</i>	5	50	10	22.7
		<i>Ceratopogon sp.</i>	1		2	4.5
		<i>Chironomus sp.</i>	2		4	9.1
		<i>Culicoides sp.</i>	4		8	18.2
		<i>Musculium sp.</i>	4		8	18.2
		<i>Polydipidium illinoense</i>	2		4	9.1
		<i>Sphaerium sp.</i>	3		6	13.6
		<i>Tanypus neopunctipennis</i>	1		2	4.5
				<b>Grand Total:</b>	44	

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/ Sample	Relative Abundance (%)
013015	F-2-1-"CREEK SECTOR F-2"	<i>Bezzia sp.</i>	1	50	2	5.6
		<i>Branchiura sowerbyi</i>	5		10	27.8
		<i>Ceratopogon sp.</i>	3		6	16.7
		<i>Chironomus sp.</i>	1		2	5.6
		<i>Coelotanypus scapularis</i>	1		2	5.6
		<i>Sphaeromias sp.</i>	7		14	38.9
				<b>Grand Total:</b>	<b>36</b>	
013016	F-2-2-"CREEK SECTOR F-2"	<i>Branchiura sowerbyi</i>	8	50	16	22.2
		<i>Ceratopogon sp.</i>	12		24	33.3
		<i>Chironomus sp.</i>	2		4	5.6
		<i>Culicoides sp.</i>	1		2	2.8
		<i>Mesovelia sp.</i>	1		2	2.8
		<i>Neoplea sp.</i>	2		4	5.6
		<i>Polypedilum illinoense</i>	1		2	2.8
		<i>Psectrotanypus sp.</i>	1		2	2.8
		<i>Sphaeromias sp.</i>	8		16	22.2
				<b>Grand Total:</b>	<b>72</b>	

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
013017	F-2-3-"CREEK SECTOR F-2"	<i>Branchiura sowerbyi</i>	9	50	18	39.1
		<i>Ceratopogon sp.</i>	11		22	47.8
		<i>Polypedilum illinoense</i>	1		2	4.3
		<i>Sphaeromias sp.</i>	2		4	8.7
			<b>Grand Total:</b>		<b>46</b>	
013018	F-3-1-"CREEK SECTOR F-3"	<i>Branchiura sowerbyi</i>	28	50	56	53.8
		<i>Culicoides sp.</i>	1		2	1.9
		<i>Hygrotaus sp.</i>	1		2	1.9
		<i>Ilyodrilus templetoni</i>	3		6	5.8
		<i>Krenopelopia sp.</i>	2		4	3.8
		<i>Limnodrilus hoffmeisteri</i>	14		28	26.9
		<i>Polypedilum illinoense</i>	1		2	1.9
		<i>Stratiomys sp.</i>	1		2	1.9
		<i>Tropisternus sp.</i>	1		2	1.9
			<b>Grand Total:</b>		<b>104</b>	

## Analytical Report

**Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824**

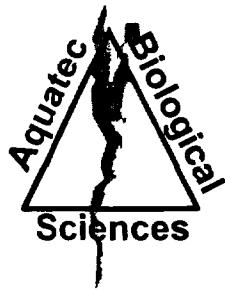
**Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99**

**Reference: SAUGET,IL**

Sample ID	Client Sample ID	Taxon	Number Observed	% Sample Examined	Total/Sample	Relative Abundance (%)
013019	F-3-2-"CREEK SECTOR F-3"	<i>Branchiura sowerbyi</i>	27	50	54	39.7
		<i>Dero vaga</i>	1		2	1.5
		<i>Ilyodrilus templetoni</i>	2		4	2.9
		<i>Limnodrilus hoffmeisteri</i>	31		62	45.6
		<i>Physella heterostropha</i>	2		4	2.9
		<i>Polypedilum illinoense</i>	2		4	2.9
		<i>Sphaeromias sp.</i>	1		2	1.5
		<i>Tipulidae</i>	1		2	1.5
		<i>Trichocorixa sp.</i>	1		2	1.5
<b>Grand Total:</b>						<b>136</b>

**Submitted By:**

**ABS Page 54 of 54**



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12951	Date/Time Sample Collected : 10/5/99 @ 9:45:00 A
Client Sample ID : B-1-1-"CREEK SECTOR B-1	Percent Sample Examined : 100
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			<i>Nais variabilis</i>	5
			Tubificidae			<i>Aulodrilus pigueti</i>	1
						<i>Aulodrilus pluriseta</i>	1
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	8
Arthropoda	Arachnoidea	Acariformes	Unionicolidae			<i>Neumania sp.</i>	1
	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	23
						<i>Culicoides sp.</i>	6
						<i>Sphaeromias sp.</i>	3
			Chironomidae	Chironominae	Chironomini	<i>Einfeldia sp.</i>	57
				Tanypodinae	Tanypodini	<i>Tanypus neopunctipennis</i>	2
							Sub-Total: 107
							Grand Total: 107

ABS

Page 1 of 74



# Aquatec Biological Sciences



Ecology



Environmental  
Toxicology



Natural Resource  
Assessments



Microbiology

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

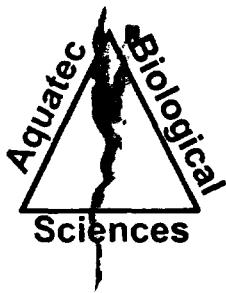
Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID	: 12952	Date/Time Sample Collected	: 10/5/99 @ 9:45:00 A
Client Sample ID	: B-1-2-"CREEK SECTOR B-1	Percent Sample Examined	: 100
Remarks	:	Sampling Depth (m)	: Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Nematoda		Dorylaimida				<i>Alaimus sp.</i>	1
Annelida	Oligochaeta	Tubificida	Naididae			<i>Nais variabilis</i>	10
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	27
Arthropoda	Insecta	Collembola	Isotomidae			<i>Isotomurus sp.</i>	3
		Diptera	Ceratopogonidae			<i>Bezzia sp.</i>	1
						<i>Ceratopogon sp.</i>	3
						<i>Culicoides sp.</i>	21
						<i>Sphaeromias sp.</i>	2
						<i>Einfeldia sp.</i>	19
			Chironomidae	Chironominae	Chironomini	<i>Paratanytarsus sp.</i>	26
					Tanytarsini	<i>Krenopelopia sp.</i>	2
				Tanypodinae		<i>Tanypterus neopunctipennis</i>	1
					Tanypodini	<i>Enallagma sp.</i>	1
	Odonata	Coenagrionidae				<i>Erythemis sp.</i>	5
		Libellulidae				<i>Leucorrhinia sp.</i>	8
							1
							Sub-Total: 131
							Grand Total: 131

ABS Page 2 of 74



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

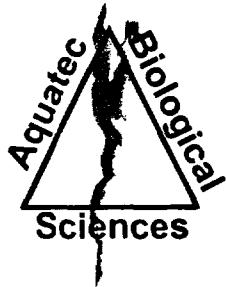
Reference: SAUGET,IL

Laboratory Sample ID	:	12953	Date/Time Sample Collected	:	10/5/99 @ 9:45:00 A
Client Sample ID	:	B-1-3-"CREEK SECTOR B-1"	Percent Sample Examined	:	100
Remarks	:		Sampling Depth (m)	:	Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			<i>Nais variabilis</i>	10
			Tubificidae			<i>Aulodrilus pigueti</i>	8
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	7
Arthropoda	Insecta	Collembola	Isotomidae			<i>Isotomurus sp.</i>	1
		Diptera	Ceratopogonidae			<i>Bezzia sp.</i>	2
						<i>Ceratopogon sp.</i>	22
						<i>Culicoides sp.</i>	2
						<i>Sphaeromias sp.</i>	10
			Chironomidae	Chironominae	Chironomini	<i>Einfeldia sp.</i>	31
					Pseudochironomi	<i>Pseudochironomus sp.</i>	1
				Tanypodinae	Tanypodini	<i>Tanypus neopunctipennis</i>	1
	Odonata	Coenagrionidae				<i>Enallagma sp.</i>	1
		Libellulidae				<i>Erythemis sp.</i>	3
						<i>Leucorrhinia sp.</i>	1
						<i>Sub-Total:</i>	100
						<i>Grand Total:</i>	100

ABS

Page 3 of 74



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

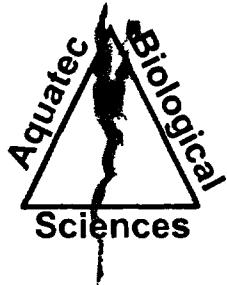
Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12954	Date/Time Sample Collected : 10/5/99 @ 2:10:00 P
Client Sample ID : B-2-1-"CREEK SECTOR B-2"	Percent Sample Examined : 25
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Aulodrilus piguei</i>	46
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	18
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			<i>Arrenurus sp.</i>	1
	Insecta	Diptera	Ceratopogonidae			<i>Bezzia varicolor</i>	3
			Chironomidae	Chironominae	Chironomini	<i>Cladopelma sp.</i>	1
						<i>Einfeldia sp.</i>	2
						<i>Polypedilum scalaenum</i>	2
				Orthocladiinae		<i>Cricotopus laetus</i>	1
					Orthocladiini	<i>Cricotopus fuscus</i>	4
				Tanypodinae		<i>Krenopelopia sp.</i>	3
					Tanypodini	<i>Tanypus carinatus</i>	1
						<i>Tanypus neopunctipennis</i>	1
	Ephemeroptera	Caenidae				<i>Caenis sp.</i>	24
	Odonata	Coenagrionidae				<i>Enallagma sp.</i>	7
		Libellulidae				<i>Erythemis sp.</i>	1
						<i>Leucorrhinia sp.</i>	1
	Trichoptera	Hydroptilidae	Hydroptilinae			<i>Hydroptila ajax</i>	2
						Sub-Total:	120
						Grand Total:	120

ABS Page 4 of 74



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

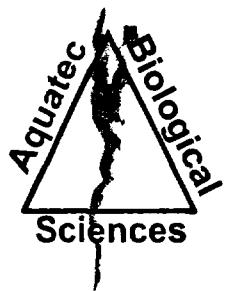
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12955	Date/Time Sample Collected : 10/5/99 @ 2:10:00 P
Client Sample ID : B-2-2-"CREEK SECTOR B-2"	Percent Sample Examined : 25
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	2
			Tubificidae			<i>Aulodrilus pigueti</i>	12
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	34
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Bezzia sp.</i>	1
						<i>Bezzia varicolor</i>	1
						<i>Ceratopogon sp.</i>	1
						<i>Sphaeromias sp.</i>	1
			Chironomidae	Chironominae	Chironomini	<i>Cladopelma sp.</i>	1
						<i>Dicrotendipes sp.</i>	1
						<i>Einfeldia sp.</i>	3
						<i>Phaenopsectra flavipes</i>	1
						<i>Polypedilum scalaenum</i>	1
				Orthocladiinae		<i>Cricotopus laetus</i>	5
					Orthocladiini	<i>Cricotopus fuscus</i>	12
				Tanypodinae		<i>Krenopelopia sp.</i>	4
					Pentaneurini	<i>Labrundinia sp.</i>	1
		Ephemeroptera	Caenidae			<i>Caenis sp.</i>	13
		Odonata	Coenagrionidae			<i>Enallagma sp.</i>	5
			Libellulidae			<i>Erythemis sp.</i>	3



# Aquatec Biological Sciences

 Ecology

 Environmental Toxicology

 Natural Resource Assessments

 Microbiology

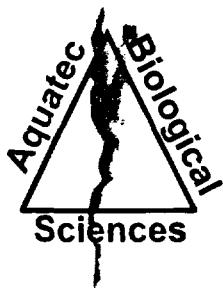
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12955	Date/Time Sample Collected : 10/5/99 @ 2:10:00 P
Client Sample ID : B-2-2-"CREEK SECTOR B-2"	Percent Sample Examined : 25
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Arthropoda	Insecta	Odonata	Libellulidae			<i>Leucorrhinia</i> sp.	1
		Trichoptera	Hydroptilidae	Hydroptilinae		<i>Hydroptila ajax</i>	1
							Sub-Total: 104
							Grand Total: 104



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

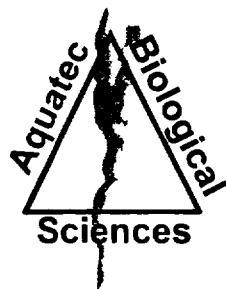
Reference: SAUGET,IL

Laboratory Sample ID : 12956	Date/Time Sample Collected : 10/5/99 @ 2:10:00 P
Client Sample ID : B-2-3-"CREEK SECTOR B-2"	Percent Sample Examined : 12.5
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	5
			Tubificidae			<i>Aulodrilus pigueti</i>	28
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	8
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			<i>Arrenurus sp.</i>	2
			Limnesiidae			<i>Limnesia sp.</i>	1
			Unionicolidae			<i>Neumania sp.</i>	3
	Insecta	Diptera	Ceratopogonidae			<i>Bezzia varicolor</i>	2
						<i>Ceratopogon sp.</i>	1
						<i>Culicoides sp.</i>	1
			Chironomidae	Chironominae	Chironomini	<i>Cladopelma sp.</i>	3
						<i>Einfeldia sp.</i>	6
						<i>Phaenopsectra flavipes</i>	1
						<i>Polypedilum scalaenum</i>	5
				Pseudochironomini	Pseudochironomus sp.		1
				Orthocladiinae	<i>laetus</i>		1
					<i>Orthocladiini</i>	<i>Cricotopus fuscus</i>	5
						<i>Psectrocladius sp.</i>	1
				Tanypodinae		<i>Krenopeltopia sp.</i>	3
					Tanypodini	<i>Tanyptus neopunctipennis</i>	1

ABS

Page 7 of 74



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

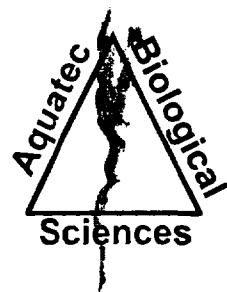
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12956	Date/Time Sample Collected : 10/5/99 @ 2:10:00 P
Client Sample ID : B-2-3-"CREEK SECTOR B-2"	Percent Sample Examined : 12.5
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Arthropoda	Insecta	Ephemeroptera	Caenidae			<i>Caenis sp.</i>	18
		Odonata	Coenagrionidae			<i>Enallagma sp.</i>	4
			Libellulidae			<i>Leucorrhinia sp.</i>	1
						<i>Perithemis sp.</i>	4
						Sub-Total:	105
						Grand Total:	105



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

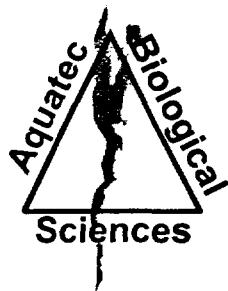
**Reference: SAUGET,IL**

Laboratory Sample ID	: 12957	Date/Time Sample Collected	: 10/5/99 @ 9:00:00 A
Client Sample ID	: B-3-1-"CREEK SECTOR B-3"	Percent Sample Examined	: 25
Remarks	:	Sampling Depth (m)	: Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Aulodrilus pigueti</i>	7
						<i>Limnodrilus claparedianus</i>	1
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			<i>Arrenurus sp.</i>	10
			Mideopsidae			<i>Mideopsis sp.</i>	11
			Oxidae			<i>Oxus sp.</i>	2
			Pionidae			<i>Tiphys sp.</i>	2
			Unionicolidae			<i>Neumania sp.</i>	4
Insecta	Diptera	Ceratopogonidae				<i>Ceratopogon sp.</i>	4
		Chironomidae	Chironominae	Chironomini		<i>Einfeldia sp.</i>	13
						<i>Microchironomus sp.</i>	1
			Orthocladiinae			<i>Cricotopus laetus</i>	1
				Orthocladiini		<i>Cricotopus fuscus</i>	1
			Tanypodinae			<i>Krenopelopia sp.</i>	1
					Coelotanypodini	<i>Clinotanypus sp.</i>	1
					Procladiini	<i>Procladius sp.</i>	1
					Tanypodini	<i>Tanypus neopunctipennis</i>	2
	Ephemeroptera	Caenidae				<i>Caenis sp.</i>	41
		Siphlonuridae				<i>Siphlonurus alternatus</i>	5
	Odonata	Coenagrionidae				<i>Enallagma sp.</i>	3

Sub-Total: 111

**ABS**      **Page 9 of 74**



# Aquatec Biological Sciences



Ecology



Environmental  
Toxicology



Natural Resource  
Assessments



Microbiology

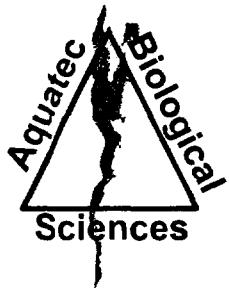
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12957	Date/Time Sample Collected : 10/5/99 @ 9:00:00 A
Client Sample ID : B-3-1-"CREEK SECTOR B-3"	Percent Sample Examined : 25
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
							Grand Total: 111



# Aquatec Biological Sciences

 Ecology Environmental Toxicology Natural Resource Assessments Microbiology

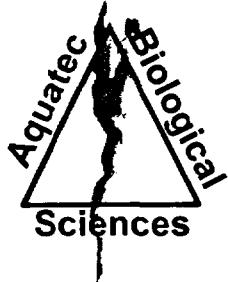
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID	: 12958	Date/Time Sample Collected	: 10/5/99 @ 9:00:00 A
Client Sample ID	: B-3-2-"CREEK SECTOR B-3"	Percent Sample Examined	: 50
Remarks	:	Sampling Depth (m)	: Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	1
			Tubificidae			<i>Aulodrilus pigueti</i>	13
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			<i>Arrenurus sp.</i>	1
			Mideopsidae			<i>Mideopsis sp.</i>	2
			Unionicolidae			<i>Neumania sp.</i>	2
Insecta	Diptera	Ceratopogonidae				<i>Ceratopogon sp.</i>	2
						<i>Sphaeromias sp.</i>	2
			Chironomidae	Chironominae	Chironomini	<i>Cryptotendipes sp.</i>	1
						<i>Dicrotendipes sp.</i>	1
						<i>Einfeldia sp.</i>	17
						<i>Microchironomus sp.</i>	2
						<i>Polypedilum scalaenum</i>	1
						<i>Tanytarsini</i>	1
						<i>Tanytarsus sp.</i>	1
						<i>Tanytarsus guerlus</i>	4
				Orthocladiinae		<i>Cricotopus laetus</i>	3
						<i>Orthocladiini</i>	1
						<i>Cricotopus fuscus</i>	1
				Tanypodinae		<i>Krenopelopia sp.</i>	1
						<i>Procladilini</i>	1
						<i>Tanypus neopunctipennis</i>	4



# Aquatec Biological Sciences

 EcologyEnvironmental  
ToxicologyNatural Resource  
Assessments

Microbiology

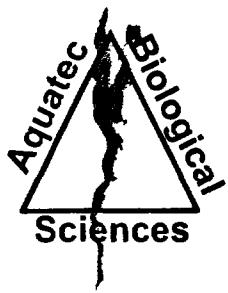
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12958	Date/Time Sample Collected : 10/5/99 @ 9:00:00 A
Client Sample ID : B-3-2-"CREEK SECTOR B-3"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Arthropoda	Insecta	Ephemeroptera	Caenidae			<i>Caenis sp.</i>	27
			Siphlonuridae			<i>Siphlonurus alternatus</i>	1
		Odonata	Coenagrionidae			<i>Enallagma sp.</i>	3
		Trichoptera	Hydroptilidae	Hydroptilinae		<i>Hydroptila ajax</i>	2
						<b>Sub-Total:</b>	<b>93</b>
						<b>Grand Total:</b>	<b>93</b>



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

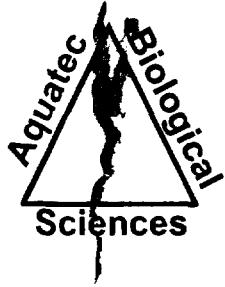
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12959	Date/Time Sample Collected : 10/5/99 @ 9:00:00 A
Client Sample ID : B-3-3-"CREEK SECTOR B-3"	Percent Sample Examined : 25
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	6
			Tubificidae			<i>Aulodrilus pigueti</i>	34
						<i>Ilyodrilus templetoni</i>	1
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	3
Arthropoda	Arachnoidea	Acariformes	Mideopsidae			<i>Mideopsis sp.</i>	1
			Pionidae			<i>Tiphys sp.</i>	1
			Unionicolidae			<i>Neumania sp.</i>	1
Insecta	Diptera	Ceratopogonidae				<i>Ceratopogon sp.</i>	4
						<i>Sphaeromias sp.</i>	2
			Chironomidae	Chironominae	Chironomini	<i>Cladopelma sp.</i>	9
						<i>Einfeldia sp.</i>	5
						<i>Microchironomus sp.</i>	1
						<i>Polypedilum scalaenum</i>	2
				Tanytarsini		<i>Tanytarsus guerlusi</i>	5
				Orthocladiinae	Orthocladiini	<i>Psectrocladius sp.</i>	1
				Tanypodinae		<i>Krenopelopia sp.</i>	2
					Coelotanypodini	<i>Cinotanypus sp.</i>	3
Ephemeroptera		Caenidae		Tanypodini		<i>Tanypus neopunctipennis</i>	1
						<i>Caenis sp.</i>	16



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12959	Date/Time Sample Collected : 10/5/99 @ 9:00:00 A
Client Sample ID : B-3-3-"CREEK SECTOR B-3"	Percent Sample Examined : 25
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Arthropoda	Insecta	Odonata	Coenagrionidae			Enallagma sp.	2
		Trichoptera	Hydroptilidae	Hydroptilinae		Hydroptila ajax	3
							Sub-Total: 103
							Grand Total: 103



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

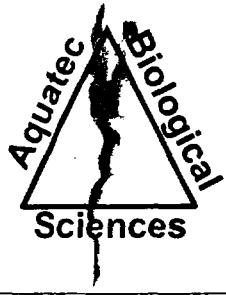
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12960	Date/Time Sample Collected : 10/5/99 @ 1:40:00 P
Client Sample ID : M-1-"SITE M"	Percent Sample Examined : 100
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	2
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	2
Arthropoda	Insecta	Diptera	Chaoboridae			<i>Chaoborus punctipennis</i>	3
		Ephemeroptera	Caenidae			<i>Caenis sp.</i>	25
		Odonata	Coenagrionidae			<i>Enallagma sp.</i>	1
			Libellulidae			<i>Erythemis sp.</i>	2
						Sub-Total:	35
						Grand Total:	35



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

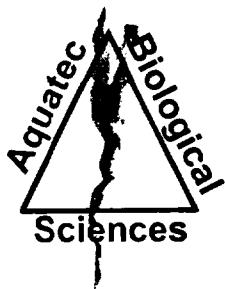
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12961	Date/Time Sample Collected : 10/5/99 @ 1:40:00 P
Client Sample ID : M-2-"SITE M"	Percent Sample Examined : 100
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Arthropoda	Insecta	Diptera	Chironomidae	Tanypodinae		<i>Krenopelopia</i> sp.	1
							Sub-Total: 1
							Grand Total: 1



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

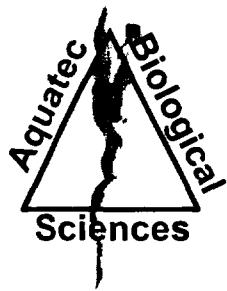
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12962	Date/Time Sample Collected : 10/5/99 @ 1:40:00 P
Client Sample ID : M-3-"SITE M"	Percent Sample Examined : 100
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted	
Arthropoda	Insecta	Coleoptera	Scirtidae			<i>Cyphon</i> sp.	1	
		Collembola	Isotomidae			<i>Isotomurus</i> sp.	1	
		Diptera	Chaoboridae			<i>Chaoborus punctipennis</i>	4	
		Ephemeroptera	Caenidae			<i>Caenis</i> sp.	4	
		Odonata	Coenagrionidae			<i>Enallagma</i> sp.	3	
			Libellulidae			<i>Erythemis</i> sp.	1	
							Sub-Total: 14	
							Grand Total: 14	



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

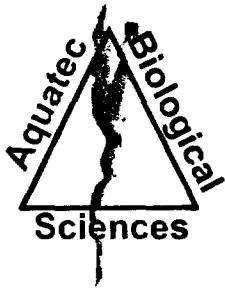
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12963	Date/Time Sample Collected : 10/4/99 @ 3:30:00 P
Client Sample ID : C-2-2-"CREEK SECTOR C-2"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Ilyodrilus templetoni</i>	7
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	5
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			<i>Arrenurus sp.</i>	1
			Eylaidae			<i>Eylaia sp.</i>	1
	Insecta	Diptera	Ceratopogonidae			<i>Sphaeromias sp.</i>	3
			Dolichopodidae			<i>Aphrosylus praedor</i>	1
			Tipulidae			<i>Tipula sp.</i>	1
		Odonata	Libellulidae			<i>Erythemis sp.</i>	1
						Sub-Total:	20
						Grand Total:	20



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

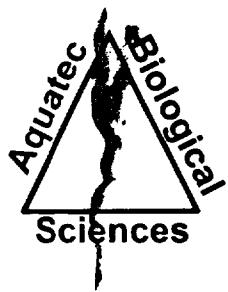
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12964	Date/Time Sample Collected : 10/4/99 @ 2:20:00 P
Client Sample ID : C-3-3-"CREEK SECTOR C-3"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Ilyodrilus templetoni</i>	1
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	31
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			<i>Arrenurus sp.</i>	3
			Pionidae			<i>Tiphys sp.</i>	2
			Unionicolidae			<i>Neumania sp.</i>	2
	Insecta	Diptera	Chironomidae	Chironominae	Chironomini	<i>Lauterborniella sp.</i>	3
						<i>Polypedilum illinoense</i>	1
				Tanypodinae	Tanypodini	<i>Tanypus carinatus</i>	2
		Hemiptera	Mesoveliidae			<i>Mesovelia sp.</i>	1
		Odonata	Libellulidae			<i>Leucorrhinia sp.</i>	1
						<i>Sub-Total:</i>	47
						<i>Grand Total:</i>	47



# Aquatec Biological Sciences

 EcologyEnvironmental  
ToxicologyNatural Resource  
Assessments

Microbiology

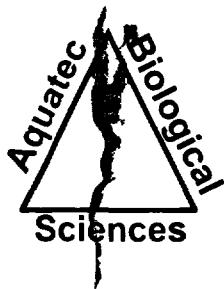
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

**Reference: SAUGET,IL**

Laboratory Sample ID	: 12965	Date/Time Sample Collected	: 10/7/99 @ 10:45:00
Client Sample ID	: F-3-3-"CREEK SECTOR F-3"	Percent Sample Examined	: 50
Remarks	:	Sampling Depth (m)	: Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Branchiura sowerbyi</i>	26
						<i>Limnodrilus hoffmeisteri</i>	11
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	1
Arthropoda	Insecta	Diptera		Ceratopogonidae		<i>Ceratopogon sp.</i>	1
						<i>Sphaeromias sp.</i>	3
			Chironomidae	Chironominae	Chironomini	<i>Polypedilum illinoense</i>	10
				Tanypodinae		<i>Krenopelopia sp.</i>	3
			Tipulidae			<i>Limonia sp.</i>	1
						<b>Sub-Total:</b>	<b>59</b>
						<b>Grand Total:</b>	<b>59</b>



# Aquatec Biological Sciences



Ecology



Environmental  
Toxicology



Natural Resource  
Assessments



Microbiology

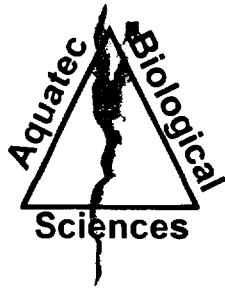
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID	: 12966	Date/Time Sample Collected	: 10/4/99 @ 4:15:00 P
Client Sample ID	: C-1-1-"CREEK SECTOR C-1"	Percent Sample Examined	: 50
Remarks	:	Sampling Depth (m)	: Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	1
Arthropoda	Insecta	Diptera		Ceratopogonidae		<i>Bezzia varicolor</i>	2
						<i>Ceratopogon sp.</i>	1
						<i>Probezzia sp.</i>	3
						<i>Sphaeromias sp.</i>	8
			Chironomidae	Chironominae	Chironomini	<i>Einfeldia sp.</i>	7
			Stratiomyidae			<i>Stratiomys sp.</i>	1
			Tipulidae			<i>Ormosia sp.</i>	4
						<b>Sub-Total:</b>	<b>29</b>
						<b>Grand Total:</b>	<b>29</b>



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

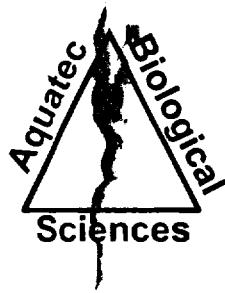
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID	: 12967	Date/Time Sample Collected	: 10/4/99 @ 4:15:00 P
Client Sample ID	: C-1-2-"CREEK SECTOR C-1"	Percent Sample Examined	: 50
Remarks	:	Sampling Depth (m)	: Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	11
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			<i>Arrenurus sp.</i>	1
	Insecta	Diptera	Ceratopogonidae			<i>Bezzia sp.</i>	11
						<i>Ceratopogon sp.</i>	3
						<i>Culicoides sp.</i>	7
						<i>Sphaeromias sp.</i>	54
			Chironomidae	Chironominae	Chironomini	<i>Einfeldia sp.</i>	2
			Tipulidae			<i>Ormosia sp.</i>	2
							Sub-Total: 91
							Grand Total: 91



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

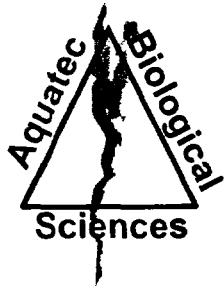
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12968 Date/Time Sample Collected : 10/4/99 @ 4:15:00 P  
Client Sample ID : C-1-3-"CREEK SECTOR C-1" Percent Sample Examined : 50  
Remarks : Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	6
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			<i>Arrenurus sp.</i>	1
	Insecta	Coleoptera	Hydrophilidae			<i>Tropisternus sp.</i>	1
		Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	1
						<i>Culicoides sp.</i>	3
						<i>Sphaeromias sp.</i>	10
			Chironomidae	Chironominae	Chironomini	<i>Einfeldia sp.</i>	7
			Tipulidae			<i>Ormosia sp.</i>	7
						<i>Sub-Total:</i>	36
						<i>Grand Total:</i>	36



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

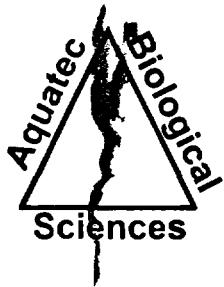
Reference: SAUGET,IL

Laboratory Sample ID : 12969	Date/Time Sample Collected : 10/4/99 @ 3:30:00 P
Client Sample ID : C-2-1-"CREEK SECTOR C-2"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted		
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	1		
						<i>Dero vaga</i>	1		
			Tubificidae			<i>Ilyodrilus templetoni</i>	5		
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	1		
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Bezzia sp.</i>	1		
						<i>Sphaeromias sp.</i>	2		
			Psychodidae			<i>Psychoda sp.</i>	1		
			Stratiomyidae			<i>Brachypremna sp.</i>	1		
						<i>Gonomyia sp.</i>	1		
							Sub-Total: 14		
							Grand Total: 14		

ABS

Page 24 of 74



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

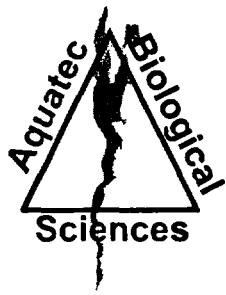
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12970	Date/Time Sample Collected : 10/4/99 @ 3:30:00 P
Client Sample ID : C-2-3-"CREEK SECTOR C-2"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Ilyodrilus templetoni</i>	1
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	5
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			<i>Arrenurus sp.</i>	1
			Pionidae			<i>Tiphys sp.</i>	1
	Insecta	Diptera	Ceratopogonidae			<i>Bezzia sp.</i>	2
						<i>Sphaeromias sp.</i>	3
			Chironomidae	Chironominae	Chironomini	<i>Einfeldia sp.</i>	1
			Tipulidae			<i>Tipula sp.</i>	1
						<i>Sub-Total:</i>	15
						<i>Grand Total:</i>	15



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

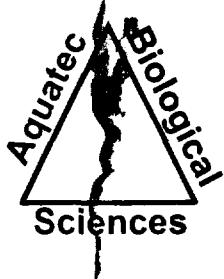
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12971	Date/Time Sample Collected : 10/4/99 @ 2:20:00 P
Client Sample ID : C-3-1-"CREEK SECTOR C-3"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Hirudinea	Pharyngobdellida	Erpobdellidae			<i>Mooreobdella microstoma</i>	1
	Oligochaeta	Tubificida	Tubificidae			<i>Ilyodrilus templeteoni</i>	1
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	37
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			<i>Arrenurus sp.</i>	2
	Insecta	Coleoptera	Hydrophilidae			<i>Helophorus sp.</i>	2
		Diptera	Chironomidae	Chironominae	Chironomini	<i>Lauterborniella sp.</i>	2
			Stratiomyidae			<i>Stratiomys sp.</i>	1
		Odonata	Libellulidae			<i>Leucorrhinia sp.</i>	1
							Sub-Total: 48
							Grand Total: 48



# Aquatec Biological Sciences

 Ecology Environmental  
Toxicology Natural Resource  
Assessments Microbiology

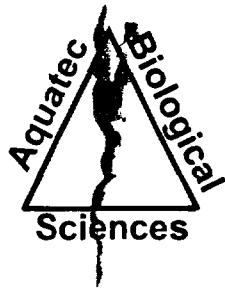
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12972	Date/Time Sample Collected : 10/4/99 @ 2:20:00 P
Client Sample ID : C-3-2-"CREEK SECTOR C-3"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	20
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			<i>Arrenurus sp.</i>	2
			Pionidae			<i>Tiphys sp.</i>	1
	Insecta	Coleoptera	Dytiscidae			<i>Laccornis sp.</i>	1
			Hydrophilidae			<i>Tropisternus sp.</i>	1
		Diptera	Chironomidae	Chironominae	Chironomini	<i>Lauterborniella sp.</i>	5
				Tanypodinae	Tanypodini	<i>Tanypus carinatus</i>	1
						<i>Stratiomy sp.</i>	1
		Hemiptera	Mesoveliiidae			<i>Mesovelia sp.</i>	1
		Odonata	Coenagrionidae			<i>Enallagma sp.</i>	1
			Libellulidae			<i>Erythemis sp.</i>	1
						<i>Sub-Total:</i>	35
						<i>Grand Total:</i>	35



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

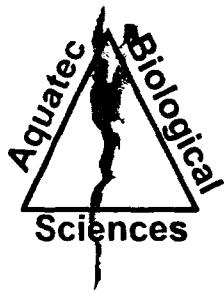
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12973 Date/Time Sample Collected : 10/8/99 @ 2:30:00 P  
Client Sample ID : REF2-1-1-"REFERENCE LOCATION 2-1" Percent Sample Examined : 10  
Remarks : Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			<i>Nais variabilis</i>	1
			Tubificidae			<i>Limnodrilus hoffmeisteri</i>	149
						<i>Limnodrilus udekemianus</i>	1
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	2
Arthropoda	Crustacea	Decapoda	Palaemonidae			<i>Palaemonetes kadiakensis</i>	2
	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	1
			Chironomidae	Tanypodinae	Tanypodini	<i>Tanypus neopunctipennis</i>	2
			Ephydriidae			<i>Ephydra subopaca</i>	6
							Sub-Total: 164
							Grand Total: 164



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

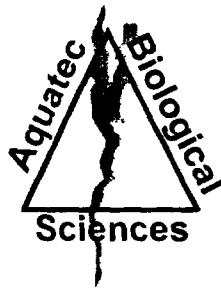
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

## Reference: SAUGET,IL

Laboratory Sample ID : 12974	Date/Time Sample Collected : 10/8/99 @ 2:30:00 P
Client Sample ID : REF2-1-2-"REFERENCE LOCATION 2-1"	Percent Sample Examined : 10
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Aulodrilus pluriseta</i>	1
						<i>Limnodrilus hoffmeisteri</i>	115
						<i>Psammoryctides californianus</i>	1
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	3
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	2
						<i>Culicoides sp.</i>	1
						<i>Sphaeromias sp.</i>	1
			Chironomidae	Tanypodinae	Tanypodini	<i>Tanypus neopunctipennis</i>	2
		Hemiptera	Corixidae			<i>Sigara sp.</i>	1
				Corixinae		<i>Trichocorixa sp.</i>	2
						Sub-Total:	129
						Grand Total:	129



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

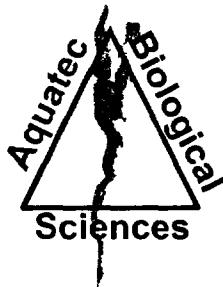
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12975	Date/Time Sample Collected : 10/8/99 @ 2:30:00 P
Client Sample ID : REF2-1-3-"REFERENCE LOCATION 2-1"	Percent Sample Examined : 10
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted		
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	1		
			Tubificidae			<i>Aulodrilus pluriseta</i>	2		
						<i>Limnodrilus hoffmeisteri</i>	50		
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Bezzia sp.</i>	1		
						<i>Ceratopogon sp.</i>	5		
						<i>Culicoides sp.</i>	60		
						<i>Sphaeromias sp.</i>	1		
		Hemiptera	Chironomidae	Tanypodinae	Tanypodini	<i>Tanypus neopunctipennis</i>	28		
			Corixidae	Corixinae		<i>Trichocorixa sp.</i>	1		
							Sub-Total: 149		
							Grand Total: 149		



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

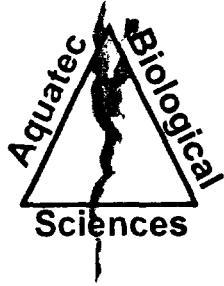
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12976	Date/Time Sample Collected : 10/9/99 @ 10:30:00
Client Sample ID : REF2-2-1-"REFERENCE LOCATION 2-2"	Percent Sample Examined : 100
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	1
			Tubificidae			<i>Aulodrilus pigueti</i>	1
						<i>Limnodrilus hoffmeisteri</i>	22
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	8
						<i>Sphaeromias sp.</i>	1
			Chironomidae	Chironominae	Tanytarsini	<i>Tanytarsus sp.</i>	1
				Orthocladiinae	Orthocladiini	<i>Psectrocladius sp.</i>	1
				Tanypodinae	Tanypodini	<i>Tanypus neopunctipennis</i>	1
			Tipulidae			<i>Ormosia sp.</i>	1
						<i>Sub-Total:</i>	37
						<i>Grand Total:</i>	37



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

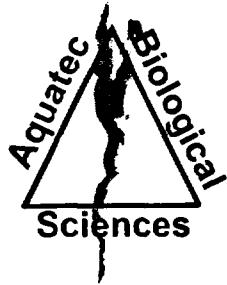
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12977	Date/Time Sample Collected : 10/9/99 @ 10:30:00
Client Sample ID : REF-2-2-"REFERENCE LOCATION 2-2"	Percent Sample Examined : 100
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Limnodrilus hoffmeisteri</i>	13
Arthropoda	Insecta	Diptera	Chironomidae	Tanypodinae	Pentaneurini	<i>Ablabesmyia annulata</i>	1
							Sub-Total: 14
							Grand Total: 14



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

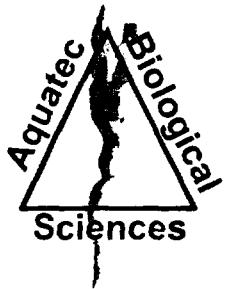
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12978	Date/Time Sample Collected : 10/9/99 @ 10:30:00
Client Sample ID : REF-2-3-"REFERENCE LOCATION 2-2"	Percent Sample Examined : 100
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Limnodrilus hoffmeisteri</i>	25
Arthropoda	Insecta	Diptera	Chironomidae	Chironominae	Chironomini	<i>Chironomus salinarius</i>	8
						<i>Polydendrum scalaenum</i>	1
				Tanypodinae	Tanypodini	<i>Tanypus neopunctipennis</i>	1
		Hemiptera	Corixidae	Corixinae		<i>Trichocorixa sp.</i>	1
						<i>Sub-Total:</i>	36
						<i>Grand Total:</i>	36



# Aquatec Biological Sciences

 Ecology Environmental  
Toxicology Natural Resource  
Assessments Microbiology

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12979	Date/Time Sample Collected : 10/8/99 @ 9:30:00 A
Client Sample ID : PDC-1-1-"PRARIE DUPONT CREEK-1"	Percent Sample Examined : 100
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted		
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	2		
			Tubificidae			<i>Ilyodrilus templetoni</i>	2		
		Diptera				<i>Limnodrilus hoffmeisteri</i>	71		
			Ceratopogonidae			<i>Psammoryctides californianus</i>	2		
Arthropoda	Insecta	Diptera		Chaoboridae		<i>Ceratopogon sp.</i>	1		
						<i>Chaoborus punctipennis</i>	1		
							Sub-Total: 79		
							Grand Total: 79		



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

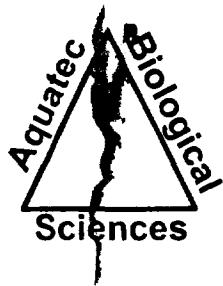
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID	: 12980	Date/Time Sample Collected	: 10/8/99 @ 9:30:00 A
Client Sample ID	: PDC-1-2-"PRARIE DUPONT CREEK-1"	Percent Sample Examined	: 100
Remarks	:	Sampling Depth (m)	: Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Limnodrilus hoffmeisteri</i>	4
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Bezzia sp.</i>	1
						<i>Ceratopogon sp.</i>	1
						<i>Sub-Total:</i>	6
						<i>Grand Total:</i>	6



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12981	Date/Time Sample Collected : 10/8/99 @ 9:30:00 A
Client Sample ID : PDC-1-3-"PRARIE DUPONT CREEK-1"	Percent Sample Examined : 100
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Limnodrilus hoffmeisteri</i>	4
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	2
			Chironomidae	Tanypodinae	Tanypodini	<i>Tanypus neopunctipennis</i>	1
							Sub-Total: 7
							Grand Total: 7



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12982	Date/Time Sample Collected : 10/8/99 @ 11:20:00
Client Sample ID : PDC-2-1-"PRARIE DUPONT CREEK-2"	Percent Sample Examined : 100
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Limnodrilus hoffmeisteri</i>	3
Mollusca	Pelecypoda	Prionodesmacea	Unionidae			<i>Lampsilis sp.</i>	1
							Sub-Total: 4
							Grand Total: 4



# Aquatec Biological Sciences



Ecology



Environmental  
Toxicology



Natural Resource  
Assessments



Microbiology

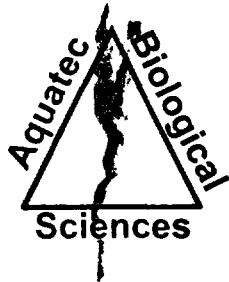
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12983	Date/Time Sample Collected : 10/8/99 @ 11:20:00
Client Sample ID : PDC-2-2-"PRARIE DUPONT CREEK-2"	Percent Sample Examined : 100
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	1
				Tubificidae		<i>Ilyodrilus templetoni</i>	3
						<i>Limnodrilus hoffmeisteri</i>	30
						<i>Psammoryctides californianus</i>	1
Arthropoda	Crustacea	Decapoda	Palaemonidae			<i>Palaemonetes kadiakensis</i>	1
							Sub-Total: 36
							Grand Total: 36



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

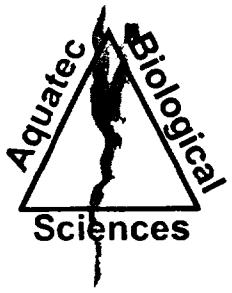
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12984	Date/Time Sample Collected : 10/8/99 @ 11:20:00
Client Sample ID : PDC-2-3-"PRARIE DUPONT CREEK-2"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	1
			Tubificidae			<i>Limnodrilus hoffmeisteri</i>	49
Arthropoda	Insecta	Diptera	Chaoboridae			<i>Chaoborus punctipennis</i>	2
			Chironomidae	Chironominae	Chironomini	<i>Chironomus decorus</i>	1
				Tanypodinae	Procladiini	<i>Procladius sp.</i>	1
						Sub-Total:	54
						Grand Total:	54



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

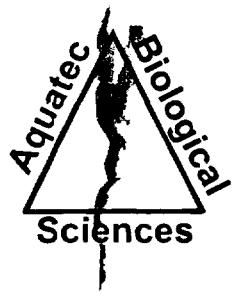
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12985	Date/Time Sample Collected : 10/6/99 @ 11:30:00
Client Sample ID : BP-1-1-"BORROW PIT LAKE-1"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Hirudinea	Pharyngobdellida	Erpobdellidae			<i>Mooreobdella microstoma</i>	1
	Oligochaeta	Tubificida	Tubificidae			<i>Branchiura sowerbyi</i>	3
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Limnodrilus hoffmeisteri</i>	3
			Chironomidae	Tanypodinae	Natarsiini	<i>Ceratopogon sp.</i>	1
		Hemiptera	Corixidae		Tanypodini	<i>Natarsia sp.</i>	1
		Odonata	Libellulidae			<i>Tanypus neopunctipennis</i>	1
						<i>Palmarcorixa sp.</i>	2
						<i>Perithemis sp.</i>	5
						<i>Sub-Total:</i>	17
						<i>Grand Total:</i>	17



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

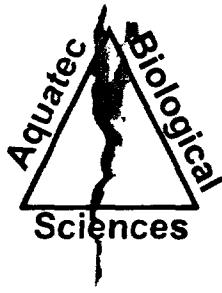
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID	:	12986	Date/Time Sample Collected	:	10/6/99 @ 11:30:00
Client Sample ID	:	BP-1-2-"BORROW PIT LAKE -1"	Percent Sample Examined	:	50
Remarks	:		Sampling Depth (m)	:	Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Hirudinea	Pharyngobdellida	Erpobdellidae			<i>Mooreobdella microstoma</i>	2
	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	3
			Tubificidae			<i>Aulodrilus pigueti</i>	1
						<i>Branchiura sowerbyi</i>	1
						<i>Limnodrilus hoffmeisteri</i>	4
Arthropoda	Insecta	Diptera	Chironomidae	Chironominae	Chironomini	<i>Cryptotendipes sp.</i>	1
				Tanypodinae	Tanypodini	<i>Tenapus neopunctipennis</i>	2
		Ephemeroptera	Caenidae			<i>Caenis sp.</i>	2
		Hemiptera	Corixidae			<i>Palmaconixia sp.</i>	3
		Odonata	Gomphidae			<i>Arigomphus sp.</i>	1
			Libellulidae			<i>Perithemis sp.</i>	2
		Trichoptera	Hydroptilidae	Hydroptilinae		<i>Hydroptila ajax</i>	1
						<i>Sub-Total:</i>	23
						<i>Grand Total:</i>	23



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

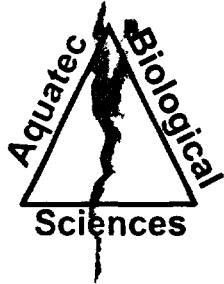
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12987	Date/Time Sample Collected : 10/6/99 @ 11:30:00
Client Sample ID : BP-1-3-"BORROW PIT LAKE-1"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Nematoda		Dorylaimida				<i>Alaimus</i> sp.	1
Annelida	Hirudinea	Pharyngobdellida	Erpobdellidae			<i>Mooreobdella microstoma</i>	1
	Oligochaeta	Tubificida	Tubificidae			<i>Branchiura sowerbyi</i>	1
						<i>Ilyodrilus templettoni</i>	1
						<i>Limnodrilus hoffmeisteri</i>	7
Arthropoda	Insecta	Coleoptera	Hydrophilidae			<i>Berosus</i> sp.	1
		Diptera	Ceratopogonidae			<i>Ceratopogon</i> sp.	2
			Chironomidae	Tanypodinae	Tanypodini	<i>Tanypus neopunctipennis</i>	1
		Ephemeroptera	Caenidae			<i>Caenis</i> sp.	1
		Hemiptera	Corixidae	Corixinae		<i>Trichocorixa</i> sp.	5
		Odonata	Libellulidae			<i>Perithemis</i> sp.	2
						Sub-Total:	23
						Grand Total:	23



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

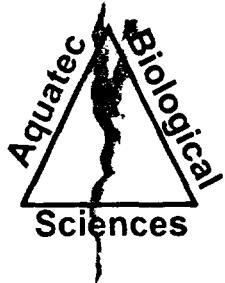
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12988	Date/Time Sample Collected : 10/6/99 @ 9:30:00 A
Client Sample ID : BP-2-2-"BORROW PIT LAKE-2"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Branchiura sowerbyi</i>	2
						<i>Ilyodrilus templettoni</i>	4
						<i>Limnodrilus hoffmeisteri</i>	13
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	1
			Chironomidae	Chironominae	Chironomini	<i>Chironomus salinarius</i>	3
				Tanypodinae	Coelotanypodini	<i>Clinotanypus sp.</i>	2
					Procladiini	<i>Procladius sp.</i>	3
					Tanypodini	<i>Tanypus neopunctipennis</i>	1
						<i>Sub-Total:</i>	29
						<i>Grand Total:</i>	29



# Aquatec Biological Sciences



Ecology



Environmental  
Toxicology



Natural Resource  
Assessments



Microbiology

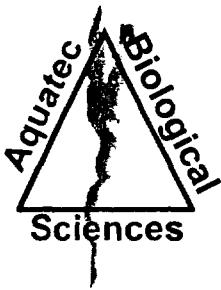
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12989	Date/Time Sample Collected : 10/6/99 @ 9:30:00 A
Client Sample ID : BP-2-3-"BORROW PIT LAKE-2"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	6
			Tubificidae			<i>Branchiura sowerbyi</i>	2
						<i>Limnodrilus hoffmeisteri</i>	18
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	7
			Chironomidae	Chironominae	Chironomini	<i>Chironomus decorus</i>	2
						<i>Cladopelma sp.</i>	1
				Tanytarsini		<i>Tanytarsus sp.</i>	2
						<i>Closterotanytarsus sp.</i>	1
				Tanypodinae	Coelotanypodini	<i>Clinotanypus sp.</i>	1
					Procladiini	<i>Procladius sp.</i>	1
					Tanypodini	<i>Tanypus neopunctipennis</i>	1
						<i>Tanypus stellatus</i>	2
			Tipulidae				1
	Odonata		Gomphidae			<i>Arigomphus sp.</i>	1
						<i>Sub-Total:</i>	45
						<i>Grand Total:</i>	45



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

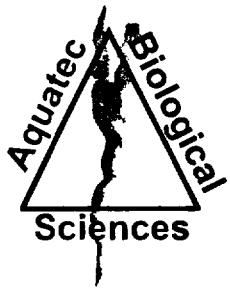
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12990	Date/Time Sample Collected : 10/6/99 @ 4:30:00 P
Client Sample ID : BP-3-2-"BORROW PIT LAKE-3"	Percent Sample Examined : 100
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted			
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	1			
				Tubificidae		<i>Branchiura sowerbyi</i>	2			
						<i>Limnodrilus hoffmeisteri</i>	7			
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	1			
						<i>Sphaeromias sp.</i>	1			
				Chironomidae	Chironominae	<i>Tanytarsini</i>	<i>Tanytarsus sp.</i>			
		Odonata	Libellulidae	Tanypodinae	Tanypodini	<i>Tanypterus neopunctipennis</i>	1			
						<i>Perithemis sp.</i>	1			
						<i>Plathemis sp.</i>	1			
							Sub-Total: 16			
							Grand Total: 16			



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

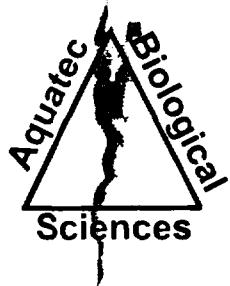
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

**Reference: SAUGET,IL**

Laboratory Sample ID : 12991	Date/Time Sample Collected : 10/6/99 @ 4:30:00 P
Client Sample ID : BP-3-3-"BORROW PIT LAKE-3"	Percent Sample Examined : 100
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted		
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	3		
			Tubificidae			<i>Branchiura sowerbyi</i>	5		
						<i>Limnodrilus hoffmeisteri</i>	36		
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Bezzia sp.</i>	1		
			Chaoboridae			<i>Ceratopogon sp.</i>	2		
			Chironomidae	Chironominae	Chironomini	<i>Cryptochironomus fulvus</i>	1		
		Odonata	Tanypodinae	Tanypodini		<i>Tanypus neopunctipennis</i>	1		
			Libellulidae			<i>Perithemis sp.</i>	1		
							<i>Sub-Total:</i> 51		
							<i>Grand Total:</i> 51		



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

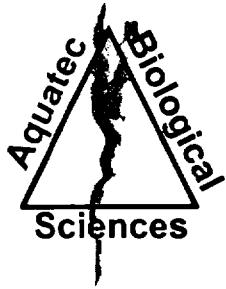
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID	: 12992	Date/Time Sample Collected	: 10/6/99 @ 4:30:00 P
Client Sample ID	: BP-3-1-"BORROW PIT LAKE-3"	Percent Sample Examined	: 100
Remarks	:	Sampling Depth (m)	: Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted		
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	16		
			Tubificidae			<i>Aulodrilus pigueti</i>	1		
						<i>Branchiura sowerbyi</i>	9		
						<i>Limnodrilus hoffmeisteri</i>	42		
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	5		
						<i>Sphaeromias sp.</i>	1		
			Chironomidae	Chironominae	Chironomini	<i>Cryptochironomus fulvus</i>	3		
				Tanypodinae	Coelotanypodini	<i>Clinotanypus sp.</i>	1		
					Tanypodini	<i>Tanypus neopunctipennis</i>	4		
			Odonata	Libellulidae		<i>Perithemis sp.</i>	2		
							Sub-Total: 84		
							Grand Total: 84		



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

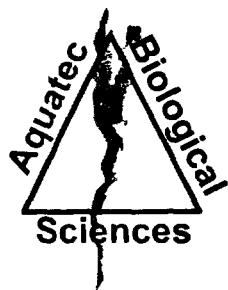
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID	: 12993	Date/Time Sample Collected	: 10/4/99 @ 10:45:00
Client Sample ID	: D-1-2-"CREEK SECTOR D-1"	Percent Sample Examined	: 50
Remarks	:	Sampling Depth (m)	: Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	1
			Tubificidae			<i>Ilyodrilus templetoni</i>	12
						<i>Limnodrilus claparedianus</i>	1
Mollusca	Pelecypoda	Prionodesmacea	Sphaeriidae			<i>Sphaerium sp.</i>	1
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			<i>Arrenurus sp.</i>	1
	Insecta	Diptera	Ceratopogonidae			<i>Sphaeromias sp.</i>	10
			Chironomidae	Chironominae	Chironomini	<i>Cladopelma sp.</i>	1
						<i>Einfeldia sp.</i>	25
						Sub-Total:	52
						Grand Total:	52



# Aquatec Biological Sciences

 EcologyEnvironmental  
ToxicologyNatural Resource  
Assessments

Microbiology

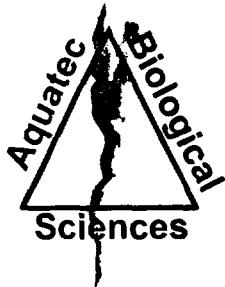
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

**Reference: SAUGET,IL**

Laboratory Sample ID	: 12994	Date/Time Sample Collected	: 10/4/99 @ 10:45:00
Client Sample ID	: D-1-3-"CREEK SECTOR D-1"	Percent Sample Examined	: 50
Remarks	:	Sampling Depth (m)	: Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	1
			Tubificidae			<i>Ilyodrilus templetoni</i>	6
Mollusca	Pelecypoda	Prionodesmacea	Sphaeriidae			<i>Sphaerium sp.</i>	1
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			<i>Arrenurus sp.</i>	2
			Mideopsidae			<i>Mideopsis sp.</i>	3
	Insecta	Diptera	Ceratopogonidae			<i>Bezzia sp.</i>	1
						<i>Ceratopogon sp.</i>	1
						<i>Culicoides sp.</i>	5
						<i>Sphaeromias sp.</i>	5
			Chironomidae	Chironominae	Chironomini	<i>Einfeldia sp.</i>	23
							<i>Sub-Total:</i> 48
							<i>Grand Total:</i> 48



# Aquatec Biological Sciences

 Ecology Environmental Toxicology Natural Resource Assessments Microbiology

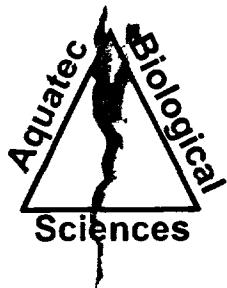
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12995	Date/Time Sample Collected : 10/6/99 @ 9:30:00 A
Client Sample ID : BP-2-1-"BORROW PIT LAKE-2"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	6
			Tubificidae			<i>Aulodrilus pigueti</i>	4
						<i>Branchiura sowerbyi</i>	2
						<i>Ilyodrilus templetoni</i>	5
						<i>Limnodrilus hoffmeisteri</i>	27
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	3
						<i>Culicoides sp.</i>	1
			Chironomidae	Chironominae	Chironomini	<i>Chironomus salinarius</i>	1
				Tanypodinae	Coelotanypodini	<i>Clinotanypus sp.</i>	2
					Tanypodini	<i>Tanypus neopunctipennis</i>	2
						<i>Tanypus stellatus</i>	3
		Odonata	Gomphidae			<i>Arigomphus sp.</i>	1
						<b>Sub-Total:</b>	<b>57</b>
						<b>Grand Total:</b>	<b>57</b>



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

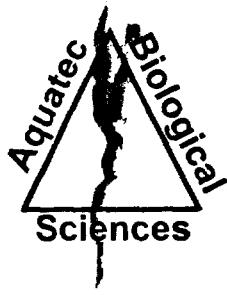
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12996	Date/Time Sample Collected : 10/4/99 @ 12:10:00
Client Sample ID : D-2-3-"CREEK SECTOR D-2"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	1
Mollusca	Pelecypoda	Prionodesmacea	Sphaeriidae			<i>Sphaerium sp.</i>	1
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	2
			Chironomidae	Chironominae	Chironomini	<i>Einfeldia sp.</i>	8
				Tanypodinae	Tanypodini	<i>Tanypus neopunctipennis</i>	1
							Sub-Total: 16
							Grand Total: 16



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

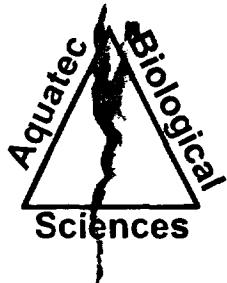
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12997 Date/Time Sample Collected : 10/4/99 @ 10:45:00  
Client Sample ID : D-1-1-"CREEK SECTOR D-1" Percent Sample Examined : 50  
Remarks : Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Ilyodrilus templetoni</i>	35
						<i>Limnodrilus hoffmeisteri</i>	8
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	1
	Pelecypoda	Prionodesmacea	Sphaeriidae			<i>Sphaerium sp.</i>	1
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	1
			Chironomidae	Chironominae	Chironomini	<i>Einfeldia sp.</i>	3
							11
							Sub-Total: 60
							Grand Total: 60



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

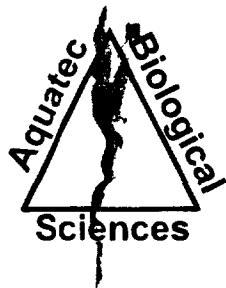
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12998 Date/Time Sample Collected : 10/5/99 @ 9:50:00 A  
Client Sample ID : E-1-1-"CREEK SECTOR E-1" Percent Sample Examined : 50  
Remarks : Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	3
	Pelecypoda	Prionodesmacea	Sphaeriidae			<i>Musculium sp.</i>	1
Anthropoda	Insecta	Coleoptera	Hydrophilidae			<i>Enochrus sp.</i>	1
		Collembola	Isotomidae			<i>Isotomurus sp.</i>	1
	Diptera		Ceratopogonidae			<i>Bezzia varicolor</i>	1
						<i>Culicoides sp.</i>	2
						<i>Sphaeromias sp.</i>	1
			Chironomidae	Chironominae	Chironomini	<i>Polypedilum illinoense</i>	1
				Tanypodinae	Tanypodini	<i>Tanypus carinatus</i>	3
			Muscidae			<i>Limnophora torreyae</i>	1
	Hemiptera	Pleidae				<i>Neoplea sp.</i>	2
	Megaloptera	Corydalidae				<i>Chauliodes sp.</i>	1
	Odonata	Coenagrionidae				<i>Enallagma sp.</i>	1
						<i>Sub-Total:</i>	19
						<i>Grand Total:</i>	19



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

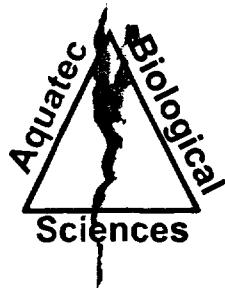
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 12999	Date/Time Sample Collected : 10/5/99 @ 9:50:00 A
Client Sample ID : E-1-2-"CREEK SECTOR E-1"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted	
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Ilyodrilus templetoni</i>	1	
Mollusca	Gastropoda	Basommatophora	Lymnaeidae			<i>Pseudosuccinea columella</i>	1	
			Physidae			<i>Physella heterostropha</i>	8	
	Pelecypoda	Prionodesmacea	Sphaeriidae			<i>Musculium sp.</i>	3	
Arthropoda	Insecta	Coleoptera	Hydrophilidae			<i>Berosus sp.</i>	1	
		Diptera	Ceratopogonidae			<i>Bezzia varicolor</i>	1	
						<i>Culicoides sp.</i>	7	
						<i>Sphaeromias sp.</i>	2	
			Chironomidae	Tanypodinae	Tanypodini	<i>Tanypus carinatus</i>	5	
			Dolichopodidae			<i>Aphrosylus praedor</i>	2	
		Hemiptera	Mesovelidae			<i>Mesovelia sp.</i>	1	
			Pleidae			<i>Neoplea sp.</i>	5	
		Odonata	Coenagrionidae			<i>Enallagma sp.</i>	1	
							Sub-Total: 38	
							Grand Total: 38	



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

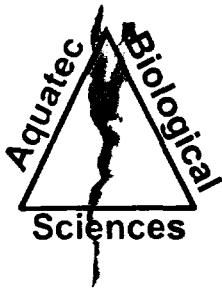
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID	: 13000	Date/Time Sample Collected	: 10/5/99 @ 9:50:00 A
Client Sample ID	: E-1-3-"CREEK SECTOR E-1"	Percent Sample Examined	: 50
Remarks	:	Sampling Depth (m)	: Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted	
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero vaga</i>	1	
			Tubificidae			<i>Ilyodrilus templetoni</i>	1	
						<i>Limnodrilus claparedianus</i>	1	
Mollusca	Gastropoda	Basommatophora	Lymnaeidae			<i>Pseudosuccinea columella</i>	1	
			Physidae			<i>Physella heterostropha</i>	8	
Arthropoda	Pelecypoda	Prionodesmacea	Sphaeriidae			<i>Musculium sp.</i>	4	
						<i>Peltodytes sp.</i>	1	
	Insecta	Coleoptera	Haliplidae			<i>Bezzia varicolor</i>	1	
			Diptera	Ceratopogonidae		<i>Culicoides sp.</i>	3	
	Hemiptera	Chironomidae		Chironominae	Chironomini	<i>Polypedilum illinoense</i>	2	
				Tanypodinae	Tanypodini	<i>Tanypus carinatus</i>	2	
		Pleidae				<i>Neoplea sp.</i>	10	
		Lepidoptera	Pyralidae			<i>Acentria sp.</i>	1	
							Sub-Total: 36	
							Grand Total: 36	



# Aquatec Biological Sciences



Ecology



Environmental  
Toxicology



Natural Resource  
Assessments



Microbiology

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 13001	Date/Time Sample Collected : 10/5/99 @ 9:05:00 A
Client Sample ID : E-2-1-"CREEK SECTOR E-2"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted			
Mollusca	Gastropoda	Basommatophora	Lymnaeidae			<i>Pseudosuccinea columella</i>	1			
				Physidae		<i>Physella heterostropha</i>	12			
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			<i>Arrenurus sp.</i>	1			
				Scirtidae		<i>Cyphon sp.</i>	1			
	Insecta	Coleoptera	Ceratopogonidae			<i>Bezzia sp.</i>	1			
				Diptera		<i>Culicoides sp.</i>	48			
			Chironomidae	Chironominae	Chironomini	<i>Einfeldia sp.</i>	1			
				Tanypodinae	Tanypodini	<i>Tanypus neopunctipennis</i>	1			
		Hemiptera	Pleidae			<i>Neoplea sp.</i>	1			
				Lepidoptera	Pyralidae	<i>Acentria sp.</i>	1			
							Sub-Total: 73			
							Grand Total: 73			



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

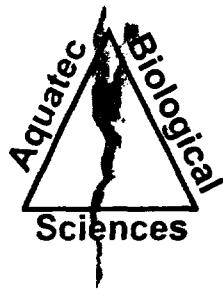
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 13002	Date/Time Sample Collected : 10/5/99 @ 9:05:00 A
Client Sample ID : E-2-2-"CREEK SECTOR E-2"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted	
Mollusca	Gastropoda	Basommatophora	Lymnaeidae			<i>Pseudosuccinea columella</i>	1	
			Physidae			<i>Physella heterostropha</i>	4	
Arthropoda	Arachnoidea	Acariformes	Limnesiidae			<i>Limnesia sp.</i>	1	
			Coleoptera	Haliplidae		<i>Peltodytes sp.</i>	1	
		Insecta	Diptera	Ceratopogonidae		<i>Bezzia sp.</i>	4	
						<i>Ceratopogon sp.</i>	1	
						<i>Culicoides sp.</i>	67	
						<i>Sphaeromias sp.</i>	2	
				Chironomidae	Chironominae	<i>Einfeldia sp.</i>	6	
						<i>Polypedilum illinoense</i>	1	
				Tanypodinae	Tanypodini	<i>Tanypus neopunctipennis</i>	1	
				Muscidae			1	
		Hemiptera	Pleidae			<i>Neoplea sp.</i>	1	
							Sub-Total: 91	
							Grand Total: 91	



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

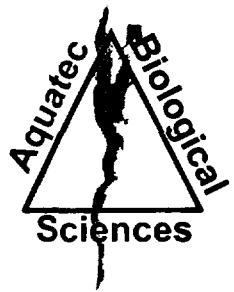
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 13003	Date/Time Sample Collected : 10/5/99 @ 9:05:00 A
Client Sample ID : E-2-3-"CREEK SECTOR E-2"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted		
Mollusca	Gastropoda	Basommatophora	Lymnaeidae			<i>Pseudosuccinea columella</i>	1		
				Physidae		<i>Physella heterostropha</i>	4		
Arthropoda	Insecta	Coleoptera	Hydrophilidae			<i>Berosus sp.</i>	1		
				Ceratopogonidae		<i>Bezzia sp.</i>	2		
		Diptera				<i>Ceratopogon sp.</i>	1		
						<i>Culicoides sp.</i>	63		
						<i>Sphaeromias sp.</i>	3		
			Chironomidae	Chironominae	Chironomini	<i>Einfeldia sp.</i>	4		
						<i>Neoplea sp.</i>	1		
			Hemiptera	Pleidae					
							Sub-Total: 80		
							Grand Total: 80		



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

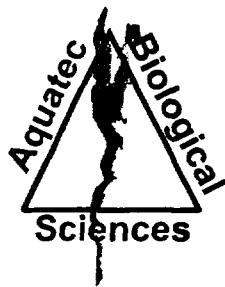
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 13004	Date/Time Sample Collected : 10/5/99 @ 12:10:00
Client Sample ID : E-3-1-"CREEK SECTOR E-3"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted	
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	1	
			Tubificidae			<i>Ilyodrilus templetoni</i>	1	
						<i>Limnodrilus clarendianus</i>	1	
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Culicoides sp.</i>	2	
		Odonata	Libellulidae			<i>Leucorrhinia sp.</i>	1	
							Sub-Total: 6	
							Grand Total: 6	



# Aquatec Biological Sciences



Ecology



Environmental  
Toxicology



Natural Resource  
Assessments



Microbiology

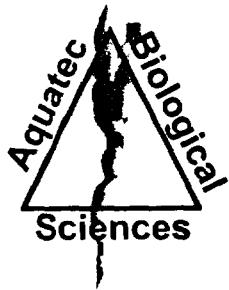
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID	: 13005	Date/Time Sample Collected	: 10/5/99 @ 12:10:00
Client Sample ID	: E-3-2-"CREEK SECTOR E-3"	Percent Sample Examined	: 50
Remarks	:	Sampling Depth (m)	: Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	25
			Tubificidae			<i>Nais variabilis</i>	1
						<i>Ilyodrilus templetoni</i>	8
						<i>Limnodrilus hoffmeisteri</i>	2
Mollusca	Pelecypoda	Prionodesmacea	Sphaeriidae			<i>Musculium sp.</i>	1
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	5
			Chironomidae	Chironominae	Chironomini	<i>Culicoides sp.</i>	2
						<i>Sphaeromias sp.</i>	2
						<i>Einfeldia sp.</i>	3
						<i>Sub-Total:</i>	49
						<i>Grand Total:</i>	49



# Aquatec Biological Sciences

Ecology

Environmental Toxicology

Natural Resource Assessments

Microbiology

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID	: 13006	Date/Time Sample Collected	: 10/5/99 @ 12:10:00
Client Sample ID	: E-3-3-"CREEK SECTOR E-3"	Percent Sample Examined	: 50
Remarks	:	Sampling Depth (m)	: Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted		
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	5		
			Tubificidae			<i>Ilyodrilus templetoni</i>	8		
						<i>Limnodrilus hoffmeisteri</i>	1		
Mollusca	Pelecypoda	Prionodesmacea	Sphaeriidae			<i>Musculium sp.</i>	2		
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Sphaeromias sp.</i>	1		
			Chironomidae	Chironominae	Chironomini	<i>Chironomus tentipediformis</i>	1		
		Odonata	Tanypodinae			<i>Krenopelopia sp.</i>	1		
			Libellulidae			<i>Leucorrhinia sp.</i>	3		
							Sub-Total: 22		
							Grand Total: 22		



# Aquatec Biological Sciences

 Ecology

 Environmental Toxicology

 Natural Resource Assessments

 Microbiology

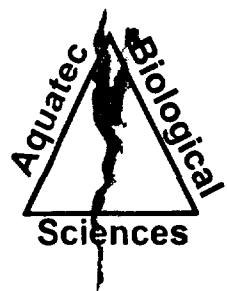
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 13007	Date/Time Sample Collected : 10/4/99 @ 12:10:00
Client Sample ID : D-2-1-"CREEK SECTOR D-2"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Hirudinea	Pharyngobdellida	Erpobdellidae			<i>Mooreobdella microstoma</i>	1
	Oligochaeta	Tubificida	Naididae			<i>Dero digitata</i>	1
			Tubificidae			<i>Ilyodrilus templetoni</i>	1
						<i>Limnodrilus hoffmeisteri</i>	2
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	1
						<i>Culicoides sp.</i>	4
						<i>Sphaeromias sp.</i>	11
			Chironomidae	Chironominae	Chironomini	<i>Einfeldia sp.</i>	16
		Odonata	Libellulidae			<i>Libellula sp.</i>	1
						<i>Sub-Total:</i>	38
						<i>Grand Total:</i>	38



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

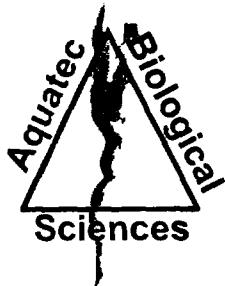
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 13008	Date/Time Sample Collected : 10/4/99 @ 12:10:00
Client Sample ID : D-2-2-"CREEK SECTOR D-2"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Hirudinea	Pharyngobdellida	Erpobdellidae			<i>Mooreobdella microstoma</i>	1
	Oligochaeta	Tubificida	Tubificidae			<i>Ilyodrilus templetoni</i>	3
						<i>Limnodrilus cervix</i>	1
						<i>Limnodrilus claparedianus</i>	2
						<i>Limnodrilus hoffmeisteri</i>	3
Mollusca	Pelecypoda	Prionodesmacea	Sphaeriidae			<i>Sphaerium sp.</i>	4
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			<i>Arrenurus sp.</i>	2
	Insecta	Diptera	Ceratopogonidae			<i>Culicoides sp.</i>	2
			Chironomidae	Chironominae	Chironomini	<i>Sphaeromias sp.</i>	3
						<i>Einfeldia sp.</i>	13
							Sub-Total: 34
							Grand Total: 34



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

**Reference: SAUGET,IL**

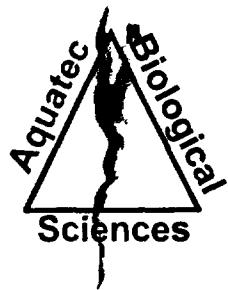
Laboratory Sample ID : 13009  
Client Sample ID : D-3-1-"CREEK SECTOR D-3"  
Remarks :

Date/Time Sample Collected : 10/4/99 @ 1:55:00 P  
Percent Sample Examined : 100  
Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Naididae			Dero digitata	3
			Tubificidae			Aulodrilus pigueti	1
						Ilyodrilus templetoni	13
						Limnodrilus claparedianus	1
						Limnodrilus hoffmeisteri	13
Mollusca	Pelecypoda	Prionodesmacea	Sphaeriidae			Sphaerium sp.	1
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			Arrenurus sp.	2
			Mideopsidae			Mideopsis sp.	1
			Insecta	Ceratopogonidae		Culicoides sp.	7
				Chironomidae	Chironominae	Chironomini	Einfeldia sp.
				Tanypodinae	Tanypodini	Tanypus neopunctipennis	1
							Sub-Total: 45
							Grand Total: 45

ABS

Page 64 of 74



# Aquatec Biological Sciences

 Ecology Environmental Toxicology Natural Resource Assessments Microbiology

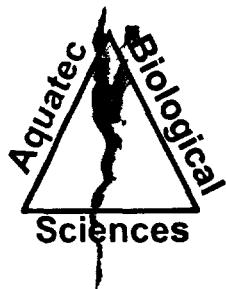
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 13010	Date/Time Sample Collected : 10/4/99 @ 1:55:00 P
Client Sample ID : D-3-2-"CREEK SECTOR D-3"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Ilyodrilus templetoni</i>	8
						<i>Limnodrilus hoffmeisteri</i>	9
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			<i>Arrenurus sp.</i>	2
			Pionidae			<i>Tiphys sp.</i>	1
	Insecta	Diptera	Ceratopogonidae			<i>Bezzia sp.</i>	1
						<i>Ceratopogon sp.</i>	1
						<i>Culicoides sp.</i>	1
						<i>Sphaeromias sp.</i>	3
			Chironomidae	Chironominae	Chironomini	<i>Einfeldia sp.</i>	6
							Sub-Total: 32
							Grand Total: 32



# Aquatec Biological Sciences



Ecology



Environmental  
Toxicology



Natural Resource  
Assessments



Microbiology

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID	: 13011	Date/Time Sample Collected	: 10/4/99 @ 1:55:00 P
Client Sample ID	: D-3-3-"CREEK SECTOR D-3"	Percent Sample Examined	: 50
Remarks	:	Sampling Depth (m)	: Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Ilyodrilus templetoni</i>	11
						<i>Limnodrilus hoffmeisteri</i>	5
Arthropoda	Arachnoidea	Acariformes	Arrenuridae			<i>Arrenurus sp.</i>	1
			Mideopsidae			<i>Mideopsis sp.</i>	1
	Insecta	Diptera	Ceratopogonidae			<i>Culicoides sp.</i>	5
			Chironomidae	Chironominae	Chironomini	<i>Einfeldia sp.</i>	5
		Odonata	Libellulidae			<i>Perithemis sp.</i>	1
							Sub-Total: 31
							Grand Total: 31



# Aquatec Biological Sciences



Ecology



Environmental  
Toxicology



Natural Resource  
Assessments



Microbiology

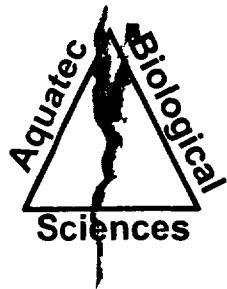
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 13012	Date/Time Sample Collected : 10/7/99 @ 3:00:00 P
Client Sample ID : F-1-1-"CREEK SECTOR F-1"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted	
Annelida	Oligochaeta	Tubificida	Naididae			<i>Haemonais waldvogeli</i>	1	
				Tubificidae		<i>Branchiura sowerbyi</i>	3	
						<i>Limnodrilus clarendonianus</i>	1	
Mollusca	Pelecypoda	Prionodesmacea	Sphaeriidae			<i>Sphaerium sp.</i>	2	
Arthropoda	Insecta	Coleoptera	Hydrophilidae			<i>Hydrochus sp.</i>	1	
		Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	1	
						<i>Culicoides sp.</i>	3	
		Hemiptera	Chironomidae	Chironominae	Chironomini	<i>Chironomus sp.</i>	1	
						<i>Chironomus decorus</i>	1	
						<i>Einfeldia sp.</i>	4	
						<i>Polypedilum illinoense</i>	5	
			Pleidae	Tanypodinae	Tanypodini	<i>Tanypus carinatus</i>	1	
						<i>Neoplea sp.</i>	1	
		Lepidoptera	Pyralidae			<i>Acentria sp.</i>	1	
							Sub-Total: 26	
							Grand Total: 26	



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

**Reference: SAUGET,IL**

Laboratory Sample ID : 13013	Date/Time Sample Collected : 10/7/99 @ 3:00:00 P
Client Sample ID : F-1-2-"CREEK SECTOR F-1"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Limnodrilus claparedianus</i>	1
Mollusca	Pelecypoda	Prionodesmacea	Sphaeriidae			<i>Sphaerium sp.</i>	8
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	1
			Chironomidae	Chironominae	Chironomini	<i>Chironomus sp.</i>	17
						<i>Polypedilum illinoense</i>	3
						<b>Sub-Total:</b>	<b>30</b>
						<b>Grand Total:</b>	<b>30</b>



# Aquatec Biological Sciences



Ecology



Environmental  
Toxicology



Natural Resource  
Assessments



Microbiology

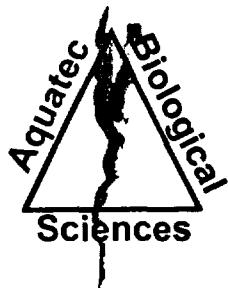
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID	: 13014	Date/Time Sample Collected	: 10/7/99 @ 3:00:00 P
Client Sample ID	: F-1-3-"CREEK SECTOR F-1"	Percent Sample Examined	: 50
Remarks	:	Sampling Depth (m)	: Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Branchiura sowerbyi</i>	5
Mollusca	Pelecypoda	Prionodesmacea	Sphaeriidae			<i>Musculium sp.</i>	4
						<i>Sphaerium sp.</i>	3
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	1
			Chironomidae	Chironominae	Chironomini	<i>Chironomus sp.</i>	2
						<i>Polyphemidium illinoense</i>	2
				Tanypodinae	Tanypodini	<i>Tanypus neopunctipennis</i>	1
							Sub-Total: 22
							Grand Total: 22



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

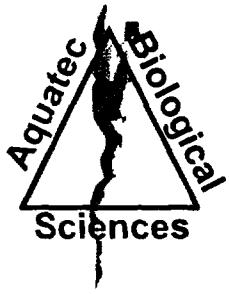
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 13015	Date/Time Sample Collected : 10/7/99 @ 4:10:00 P
Client Sample ID : F-2-1-"CREEK SECTOR F-2"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Branchiura sowerbyi</i>	5
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Bezzia sp.</i>	1
						<i>Ceratopogon sp.</i>	3
						<i>Sphaeromias sp.</i>	7
			Chironomidae	Chironominae	Chironomini	<i>Chironomus sp.</i>	1
				Tanypodinae	Coelotanypodini	<i>Coelotanypus scapularis</i>	1
						<b>Sub-Total:</b>	<b>18</b>
						<b>Grand Total:</b>	<b>18</b>



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

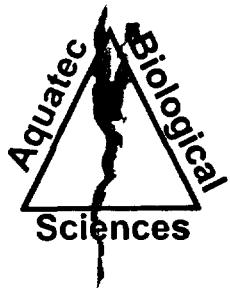
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

## Reference: SAUGET,IL

Laboratory Sample ID : 13016	Date/Time Sample Collected : 10/7/99 @ 4:10:00 P
Client Sample ID : F-2-2-"CREEK SECTOR F-2"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Branchiura sowerbyi</i>	8
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	12
						<i>Culicoides sp.</i>	1
						<i>Sphaeromias sp.</i>	8
			Chironomidae	Chironominae	Chironomini	<i>Chironomus sp.</i>	2
						<i>Polypedilum illinoense</i>	1
				Tanypodinae		<i>Psectrotanypus sp.</i>	1
	Hemiptera	Mesoveliidae				<i>Mesovelia sp.</i>	1
		Pleidae				<i>Neoplea sp.</i>	2
						<i>Sub-Total:</i>	36
						<i>Grand Total:</i>	36



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

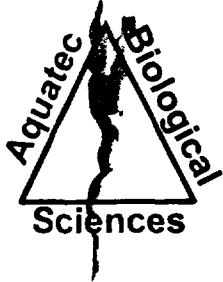
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 13017	Date/Time Sample Collected : 10/7/99 @ 4:10:00 P
Client Sample ID : F-2-3-"CREEK SECTOR F-2"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Branchiura sowerbyi</i>	9
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Ceratopogon sp.</i>	11
			Chironomidae	Chironominae	Chironomini	<i>Sphaeromias sp.</i>	2
						<i>Polypedilum illinoense</i>	1
						<i>Sub-Total:</i>	23
						<i>Grand Total:</i>	23



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

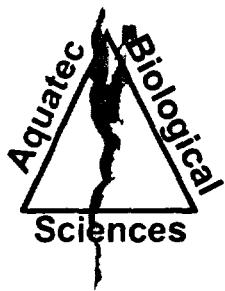
Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 13018	Date/Time Sample Collected : 10/7/99 @ 10:45:00
Client Sample ID : F-3-1-"CREEK SECTOR F-3"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted
Annelida	Oligochaeta	Tubificida	Tubificidae			<i>Branchiura sowerbyi</i>	28
						<i>Ilyodrilus templetoni</i>	3
						<i>Limnodrilus hoffmeisteri</i>	14
Arthropoda	Insecta	Coleoptera	Dytiscidae			<i>Hygrotus sp.</i>	1
			Hydrophilidae			<i>Tropisternus sp.</i>	1
		Diptera	Ceratopogonidae			<i>Culicoides sp.</i>	1
			Chironomidae	Chironominae	Chironomini	<i>Polypedilum illinoense</i>	1
				Tanypodinae		<i>Krenopelopia sp.</i>	2
			Stratiomyidae			<i>Stratiomys sp.</i>	1
						<i>Sub-Total:</i>	52
						<i>Grand Total:</i>	52



# Aquatec Biological Sciences



Ecology

Environmental  
ToxicologyNatural Resource  
Assessments

Microbiology

Charlie Menzie  
Menzie-Cura & Associates  
1 Courthouse Lane  
Chelmsford, MA 01824

Date : 12/23/99  
BTR No. : 03703  
Project No. : 99033  
No. of Samples : 69  
Date Received : 10/26/99

Reference: SAUGET,IL

Laboratory Sample ID : 13019	Date/Time Sample Collected : 10/7/99 @ 10:45:00
Client Sample ID : F-3-2-"CREEK SECTOR F-3"	Percent Sample Examined : 50
Remarks :	Sampling Depth (m) : Not Reported

Phylum	Class	Order	Family	Sub-Family	Tribe	Genus/Species/Variety	# Counted		
Annelida	Oligochaeta	Tubificida	Naididae			<i>Dero vaga</i>	1		
			Tubificidae			<i>Branchiura sowerbyi</i>	27		
						<i>Ilyodrilus tembletoni</i>	2		
						<i>Limnodrilus hoffmeisteri</i>	31		
Mollusca	Gastropoda	Basommatophora	Physidae			<i>Physella heterostropha</i>	2		
Arthropoda	Insecta	Diptera	Ceratopogonidae			<i>Sphaeromias sp.</i>	1		
			Chironomidae	Chironominae	Chironomini	<i>Polypedilum illinoense</i>	2		
		Hemiptera	Tipulidae				1		
			Corixidae	Corixinae		<i>Trichocorixa sp.</i>	1		
							Sub-Total: 68		
							Grand Total: 68		

Submitted By: Philip C. Downey

ABS

Page 74 of 74